Journal
OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

Joint Pan American-AVMA Meeting, Kansas City, August 23-27, 1959

General Articles

Surgery and Obstetrics

Clinical Data

Nutrition

Editorial

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Vol. 134 **March 15, 1959** **No. 6**

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Journal of the American Veterinary Medical Association

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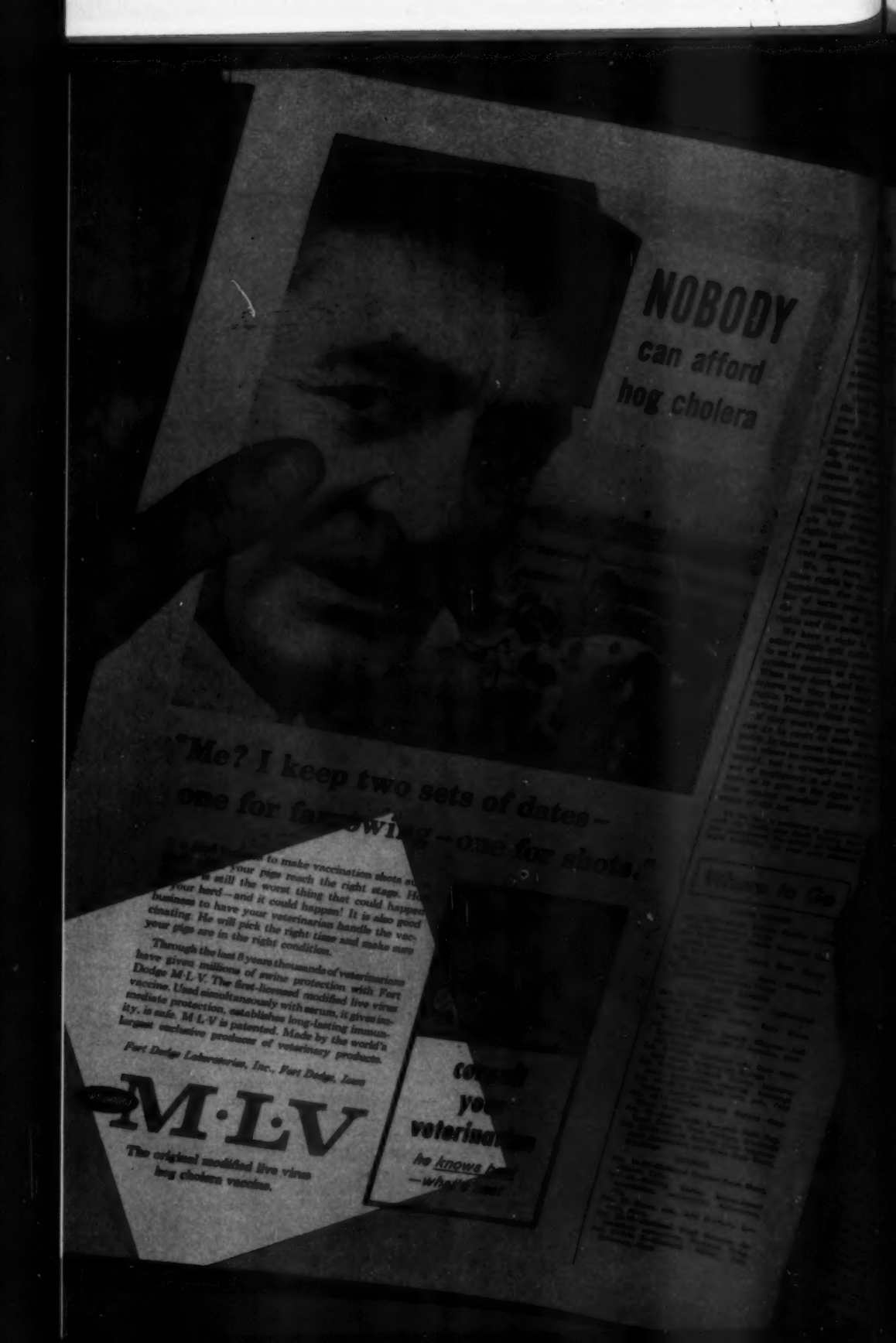
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Daily Drovers Telegram • Daily Journal Stockman
Daily Livestock Reporter • Progressive Farmer
Ohio Farmer • Missouri Ruralist • Prairie Farmer • The Farmer
Wallaces Farmer • Nebraska Farmer

Correspondence

Jan. 24, 1959

Gentlemen:

I was intensely interested in the article "A Survey of Human and Veterinary Medicine" by Dr. Krakow in the January 1 JOURNAL, page 1.

It was excellent with two exceptions. The first error is one of omission; Moorcroft is referred to as a medical man without mentioning that he was a veterinarian. He was the first Englishman to qualify formally as such, having graduated from the Lyon Veterinary College in France in 1790. He returned to England and practiced veterinary medicine successfully. In 1794, he was appointed jointly, with Coleman, to head the London Veterinary College but soon resigned as a result of difficulties with the latter.

Coleman, who was arrogant and totally ignorant of veterinary medicine, directed the students and graduates with an iron hand and, unfortunately, remained as principal for over 45 years. The London school, which was only a year old, had been established as a three-year course, admitting carefully selected students, most of them from medical colleges. Coleman soon reduced it to a three- to six-month course accepting students from stables, racetracks, and the forge. Not until the rise of the Scottish school in Edinburgh, in 1823, was Coleman's authority challenged.

Coleman's shadow stalked the veterinary profession until the latter part of the 19th century and, unfortunately, this was reflected in the early development of veterinary medicine in America, even into the present century.

It was unfortunate that Dr. Krakow chose Dr. Lyman as his authority. The latter was obviously under Coleman's influence as late as 1898.

s/JOSEPH M. ARBURA
San Francisco, Calif.

• • •

Jan. 26, 1959

Dear Dr. Kingman:

Just a line to tell you that the presentation given by Dr. S. F. Scheidy (at the Indiana V.M.A. meeting) of the activities and programs of the AVMA was the most complete, clearest, and most understandable that I have heard.

Sam did an excellent job, and the series of slides amplified his words (or *vice versa*) very well. This was to be expected by those of us who know him, but I just want to report my gratification at having a portion of the dues go to support work of this type.

Kind personal regards to the gang.

Sincerely,
s/R. C. KLUSSENDORF
Terre Haute, Ind.

CONTENTS—Continued

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REFERENCES: 1. Pollock, S.: Control of Nonspecific and Specific Enteritis in the Dog; read at the First Regional Conference on the Nitrofurans in Veterinary Medicine, Wilmington, Delaware (June 5, 1958). 2. Fisher, G. W.: Oral Use of Furadex in Canine Diarrhea, N. A. Vet. 39:133-134 (Mar. 15) 1958.

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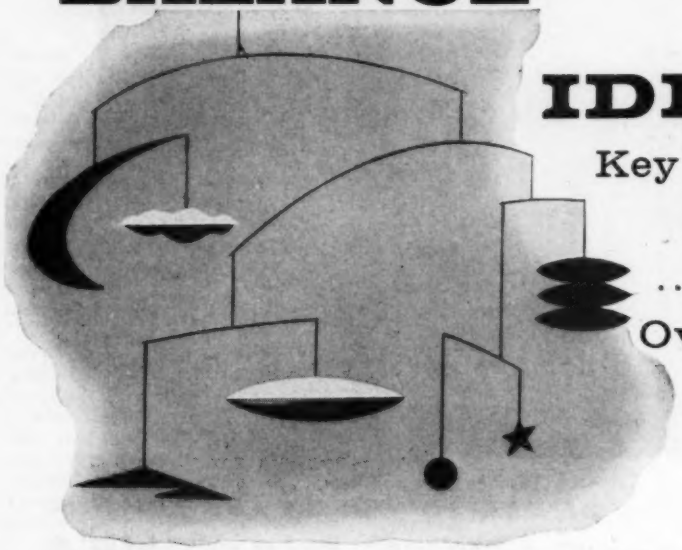

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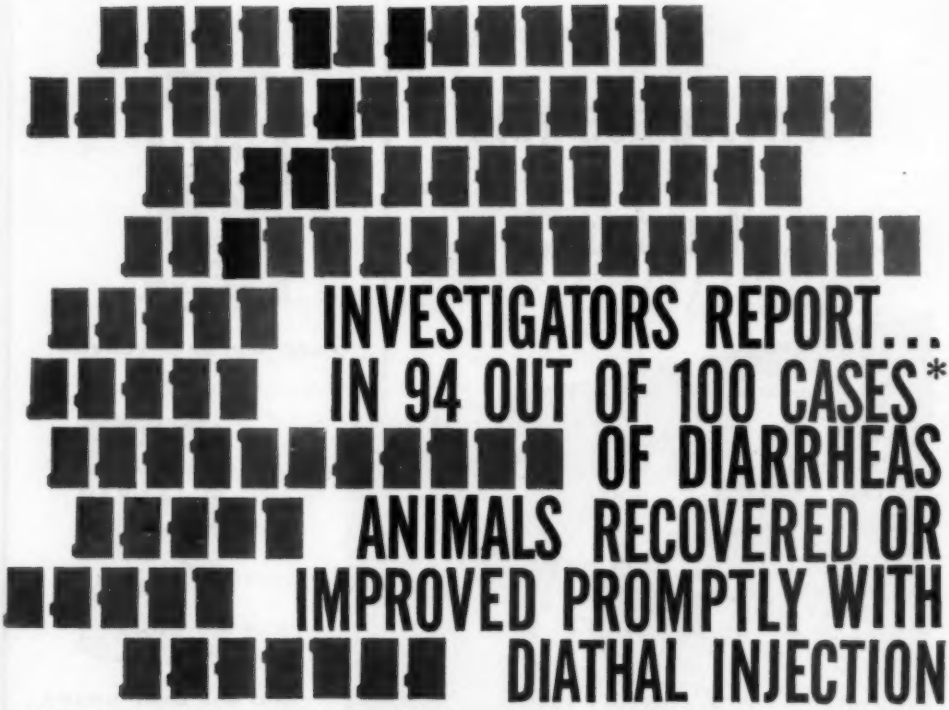

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Dosage: See CIBA Veterinary Therapeutic Index.

*Chambers, E. E.: N. Am. Vet. 37:105 (Feb.) 1956.

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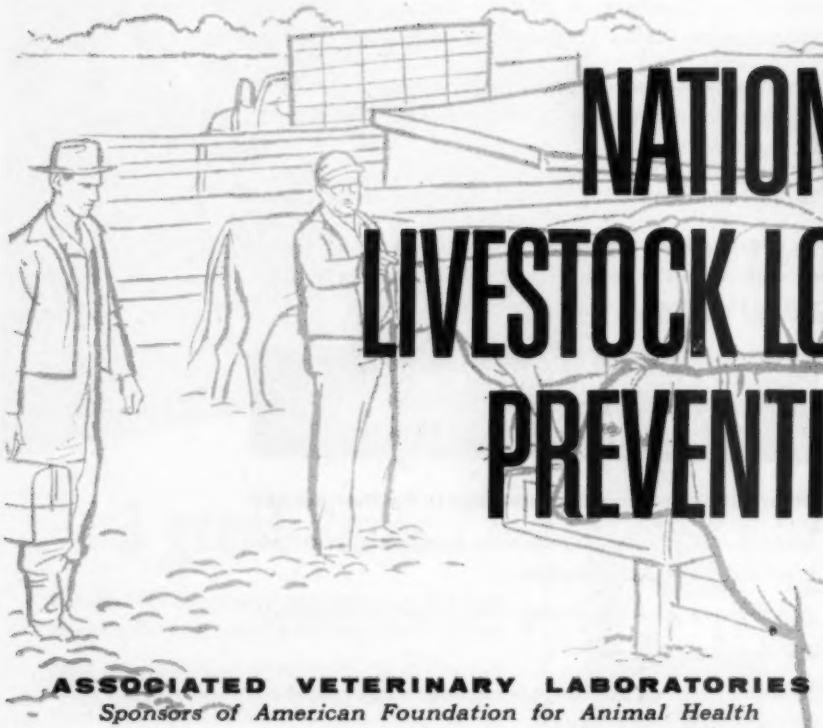

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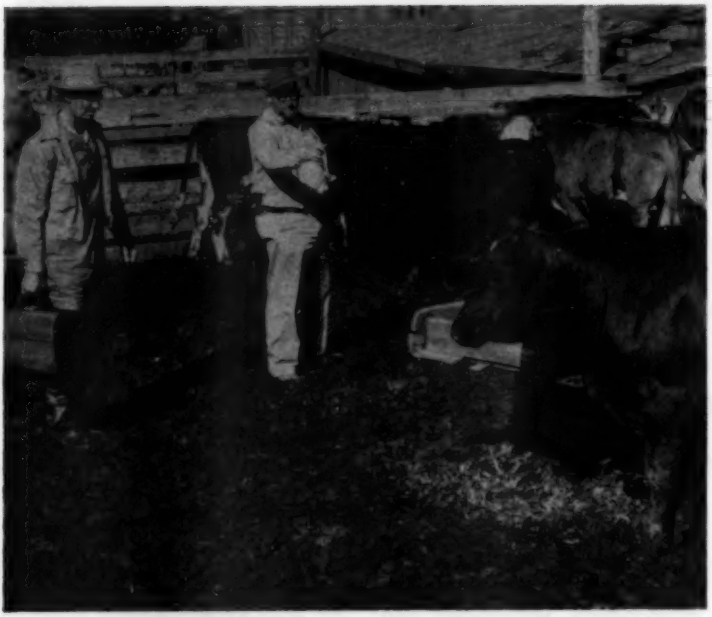

YEAR

Every veterinarian stands to benefit from the great, national drive now being conducted under the title "National Livestock Loss Prevention Year." This effort has two objectives:

- *to arouse farmers to the enormous losses they now sustain due to livestock diseases.*
- *to emphasize the value of veterinary service in checking these losses.*

Through newspapers, farm magazines, radio, television, and co-operating organizations, this campaign by American Foundation for Animal Health is being underwritten by the member companies of Associated Veterinary Laboratories . . . See names of companies listed at the left.

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Washington News

Legislative.—The house, February 5, by a record vote 381 to 20, passed H.R. 2260 to extend the Universal Military Training and Service Act to July 1, 1963 (see JOURNAL, Feb. 15, 1959, adv. p. 16). The bill, which includes "doctor draft" provisions, was referred to the Senate Armed Services Committee where extensive hearings may be held. House Ways and Means Committee favorably reported out H.R. 9 and 10, Keogh-Simpson **tax deferment plan for self-employed** (see JOURNAL, Feb. 15, 1959, adv. p. 16). Early House action is expected. Hearings on S.J. Res. 41, which Senator Hill and 57 co-sponsors introduced—a measure to establish a new institute at the National Institutes of Health to be known as the **National Institute for International Medical Research**—were held Feb. 24 through Feb. 28 by Senate Labor and Public Welfare Committee. The measure would authorize $50 million for research under National Institutes of Health; also would encourage and support planning of essential research on a world-wide basis.

★ ★ ★

Other bills introduced of interest to our profession.—(1)**Social Security.**—Many would amend title II of the Act to increase amount of outside earnings permitted without deductions from benefits. The amount varies from $1,800 to $3,000, while several bills would remove the limitation entirely. Among bills introduced, H.R. 63, H.R. 342, H.R. 514, H.R. 1325, H.R. 4701, respectively, by Representatives Cederberg (R., Mich.); Coad (D., Iowa); Green (D., Pa.), Quie (R., Minn.); Forand (D., R.I.). S.108, Senators Smathers and Holland (both D., Fla.); S. 248, Sen. Cotton (R., N.H.); S. 343, Senators Langer (R., N. Dak.) and Javits (R., N.Y.); S. 432, Sen. Jordan (D., N. Car.); S. 565, Sen. Scott (R., Pa.).

2) H.R. 3850, Rep. Dingell (D., Mich.), would increase from $4,800 to $6,000 amount of annual earnings in computing benefits and which are subject to social security taxes.

3) H.R. 4700, Rep. Forand (D., R.I.), would amend Social Security Act and Internal Revenue Code to provide hospitalization and surgical services for those eligible for OASI benefits. To finance the program, provides for increased social security tax on both employer and employee, and for self-employed. Sen. Morse (D., Oregon), introduced a similiar bill, S. 881.

4) S. 864, Sen. Humphrey (D., Minn.), to provide **greater protection against the introduction and dissemination of diseases of livestock and poultry.** Sen. Talmadge (D., Ga.), amend the **Poultry Inspection Act** to provide for grading inspection in certain cases. H.R. 1043, Rep. Multer (D., N.Y.), to provide for the **grading of meat** and for informing ultimate user of such grade. H.R. 1025, Rep. Multer (D., N.Y.), to authorize the President, under certain conditions, to control, regulate, and allocate the use and distribution of medicinal substances for the purpose of protecting and preserving the health of the American people. **Note:** "Medicinal substance" as used in bill means any vaccine, serum, medicine, chemical or other substance used for prevention or treatment of disease.

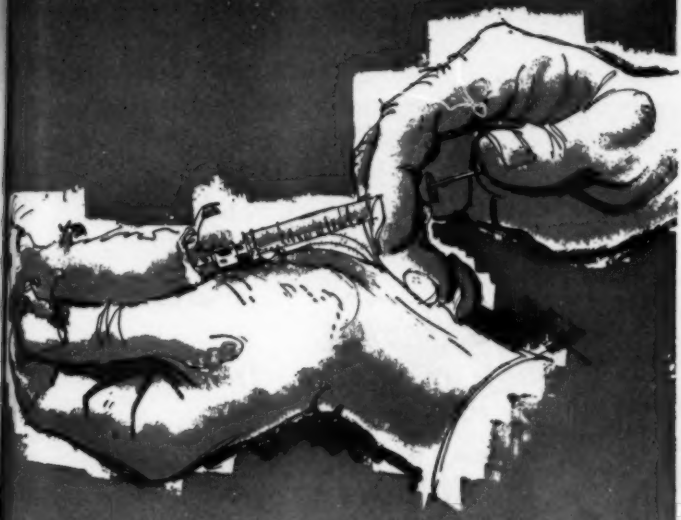
5) H.R. 3848, Rep. Davis (D., Tenn.), cited as the "Cooperative Tax Act of 1959" to provide tax equity through taxation of cooperative corporations and to provide tax credit for recipients from genuine cooperatives.

6) H.R. 4012, Rep. Celler (D., N.Y.) to provide for the **centennial celebration** of the establishment of land-grant colleges and state universities and establishment of the Department of Agriculture.

7) H.R. 1132, Rep. Huddleston (D., Ala.), to prohibit the **importation of injurious species of wildlife** and to prohibit the **transportation or importation of wild animals in violation of National, State or foreign laws.**

8) H.R. 1077, Rep. Williams (D., Minn.), relating to Commissioned Corps, P.H.S., is a companion bill to S. 185 (JOURNAL, Feb. 15, 1959, adv. p. 16).

9) S. 988, Senators Humphrey and McCarthy (D., Minn.) and Proxmire (D., Wis.), and Wiley (R., Wis.), to amend the P.H.S. Act **to protect the public from unsanitary milk and milk products** shipped in interstate commerce.



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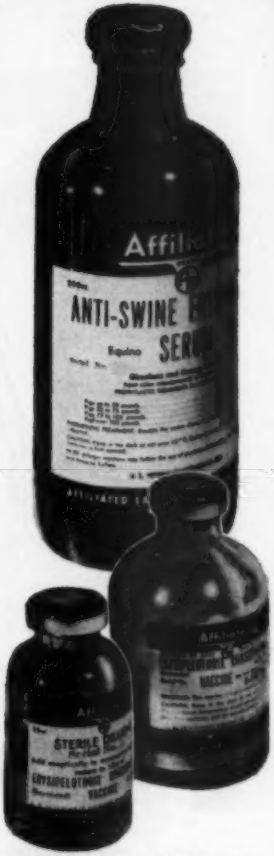

Serum available in 100, 250 and 500 cc bottles; Vaccine available in 5 and 15 cc vials.

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pleasant tasting ▪ easily administered ▪ readily retained

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REFERENCES: 1. Mosier, J. E., and Coles, E. H.: Vet. Med. 53:649 (Dec.) 1958. 2. Belloff, G. B.: Calif. Vet. 9:27 (Sept.-Oct.) 1956. 3. Mosier, J. E.: Vet. Med. 52:445 (Sept.) 1957.

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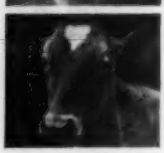

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JOURNAL
of the American Veterinary Medical Association
Established January, 1877 Chicago 5, Illinois
VOL. 134 March 15, 1959 No. 6

Veterinary Medicine in Russia

RUE JENSEN, D.V.M., Ph.D.

Fort Collins, Colorado

DURING the 40-year regime of communism in the Union of Soviet Socialist Republics, only a modicum of information has been exchanged in the broad field of veterinary medicine. In America, veterinary medical affairs and data from experimentation are published in subscribable periodicals which are filed in complete series in libraries of of the U.S.S.R. In Russia, some veterinary medical affairs are published in the subscribable periodical *Veterinarya*, Moscow, while most research data are published in nonsubcribable volumes published by individual research institutes at irregular intervals. The majority of Russian scientists read English. Only a small fraction of American scientists read Russian. Consequently, the activities of American veterinary medicine are reasonably well known in Russia, while the activities of Russian veterinary medicine are poorly understood in America.

The scientific and cultural exchange program of 1958 between the United States and the U.S.S.R. included reciprocal delegations of veterinarians. The purposes of the American delegation were to: (1) obtain information on the current status of animal diseases and veterinary medicine in the U.S.S.R.; (2) expedite exchange of scientific information in the future; and

View showing the wall of the Kremlin on the left and St. Basel's Cathedral on the right. Between the two is the south end of Red Square, Moscow.

From the College of Veterinary Medicine and Agricultural Experiment Station, Colorado State University, Fort Collins.

(3) assist in improving understanding between the American and Russian peoples.

The American delegation was composed of six veterinarians: from the U.S. Department of Agriculture—Dr. J. J. Callis, virologist, Plum Island; Dr. Frank Enzie, parasitologist, and Dr. A. H. Frank, bacteriologist, Beltsville, Md.; and Dr. C. D. Van Houweling, administrator, Washington, D. C.; from New York State Veterinary College, Cornell University—Dr. W. A. Hagan, dean; from the College of Veterinary Medicine, Colorado State University —Dr. Rue Jensen, dean. The delegation was under the sponsorship of the U.S. Department of Agriculture.

The itinerary, submitted in advance through the U.S. Department of Agriculture, was consummated at the Ministry of Agriculture, Moscow, through consultation with Dr. A. A. Boyko, chairman, Veterinary Collegium, Ministry of Agriculture. Cities visited included Kursk, Russia; Kharkov of the Ukraine; Tbilisi and Gagri of Georgia; Alma Ata of Kazakstan; Frunze of Kirghizia; Moscow; and Leningrad. Schools of veterinary medicine, research institutes, state and collective farms, and bio-factories were visited at or near the cities visited. Travel was by jet and propellered aircraft, trains, and automobiles. Entrance and exit were by way of Prague, Czechoslovakia, and Moscow. Entrance was July 24, 1958, and exit Aug. 26, 1958.

Sign at a bio-factory, Alma, Ata. "In the earliest possible year overtake the U.S.A. in production of meat, milk, and butter on a per capita basis."

Through courtesy of the Ministry of Agriculture and its official representatives, Dr. V. N. Syurin, veterinarian and virologist, and Dr. A. A. Rogoff, physician and interpreter, the delegation was privileged to attend cultural events including the American-Russian track meet, soccer between teams of Moscow and Tbilisi, two ballet performances, and one grand opera.

In general, the Russian people were amicable and communicative as well as curious about Americans and America. Veterinary medical scientists and teachers provided requested information and presented as gifts considerable Russian literature for deposition in American libraries. At points of visitation, physical facilities were usually open for study. Hospitality was generous and sometimes excessive.

While the delegation was obtaining information on all areas of veterinary medicine, the following phases were emphasized and will be presented in detail: (1) education, (2) research, and (3) application.

Veterinary Medical Education in the U.S.S.R.

The U.S.S.R. trains a large number of veterinarians for employment at state and collective farms, diagnostic laboratories, food inspection stations, and research and teaching institutions. Thirty-four schools, with wide geographic distribution, are in operation. The following four were visited: Moscow Veterinary Academy, the Georgian Zooveterinary Institute, the Alma Ata Zooveterinary Institute, and the Leningrad Veterinary Institute. Some schools of veterinary medicine are combined with zootechnical institutes for the training of veterinarians and zootechnicians (animal husbandmen). Of the four schools visited, three are combined with zootechnical institutes; in the third, relocation and union with a zootechnical institute are being considered.

The institutions visited were located at major cities and in centers of large concentrations of livestock and may be, as claimed by the administrators, among the better veterinary medical institutions of the country.

FACULTY

Veterinarians, as well as nonveterinary medical specialists (microbiologists, parasitologists, and chemists), are employed to

teach and conduct research. Whereas most of the teachers have diplomas for basic training, many have the degree of Candidate of Science, and a few, including all full professors, have the degree of D.Sc.

TABLE I—Enrollment and Staffs of Four U.S.S.R. Veterinary Colleges

College	Faculty	Students	Faculty/-students
Moscow Veterinary Academy	210	2,000	1:10
Georgian Zooveterinary Institute	75	350	1:5
Alma Ata Zooveterinary Institute	173	1,125	1:7
Leningrad Veterinary Institute	138	500	1:4

The primary function of the faculty is instruction of students. Research projects are conducted during summers when students are on vacation. The results of scientific investigations are published in book form at irregular intervals by the individual institutions. The faculties are sufficiently large to provide considerable individual attention to students (table 1).

DEPARTMENTS

Each teaching institute, in organization, is subdivided to form as many as 35 departments. Conventional departments of anatomy, physiology, microbiology, and surgery are utilized. In addition, smaller segments of a science are given departmental status; these include ectoparasitology, protozoology, virology, diseases of horses, diseases of cattle, diseases of chickens, diseases of sheep, and ancillary subjects in animal husbandry. Each department is directed by a person with the title of department head.

An agricultural experiment station at Tbilisi, Georgia.

UNDERGRADUATE TRAINING

The Moscow Veterinary Academy admits 400 new veterinary medical students annually. Students are mostly from the republic in which the school is located but also from other republics of the U.S.S.R., China, and other communist countries. Admission is competitive and based on previous scholarship and examinations. At the Alma Ata Zooveterinary Institute, a class of 225 new students is selected from approximately 1,300 applicants.

Each class contains from 20 to 30 per

Some staff members of the faculty of the Alma Ata Zooveterinary Institute with the American delegation. Front center is Dean G. K. Kanakabayev.

cent women students. During World War II and for a few subsequent years, 50 to 60 per cent of each class consisted of women students.

Instruction and lodging are provided without cost. Food and clothing must be purchased by the student. Needful students receive a stipend which is sufficient, when properly managed, to purchase food and clothing. Additional student income can be obtained through special scholarship grants and through employment during summer vacations. Students whose parents are financially able to provide assistance are not given governmental stipends. The curriculum is nearly uniform for all schools of veterinary medicine throughout the U.S.S.R. Minimum training consists of

A. Preprofessional education:
   1) Primary grades ..... 7 years
   2) Secondary grades or middle school ..... 3 years
B. Professional education ..... 5 years

Students with high scholarship records may go directly from completion of middle school to professional veterinary medical training. Only a few are admitted in this way on the basis of highly competitive examinations. Students of average scholastic ability, however, must obtain several years of practical training on a farm before admission to a school of veterinary medicine. Admission in this way is not competitive but each applicant must pass formal entrance examinations. Courses studied during each of the five professional years are listed (table 2).

For training in basic sciences, classes are divided into sections of 12 to 25 students each. Lectures and laboratory studies are given to the sections. Both laboratories and lectures utilize many graphic illustrations as visual aids. Laboratory rooms are small and, at the time of visitation, did not show evidence of containing equipment of more than minimal standard in quantity and quality. Although laboratories were not in session during the period of visit, the impression was that many laboratory exercises are instructor-demonstrations.

Hospital facilities are meager for both large and small animals. Clinical courses utilize school hospitals, abattoirs, regional hospitals, and regional laboratories for training. School hospitals receive and treat patients only during months of school instruction. Hospital administrators indicated that horses and cattle, in approximately equal numbers, constitute most of the hospital patients. A small animal clinic is maintained.

Minor surgical operations are performed by students at abattoirs on animals submitted for slaughter. Operations performed under these circumstances include dehorning, castration, neurectomy, ablation of the eye, rumenotomies, and cesarean sections. Anesthetized animals are not slaughtered until several days following the administration of the anesthetic.

During the fourth and fifth years, and the intervening summer, each student is assigned for four months to a regional or farm hospital and receives training under veterinarians assigned to the hospital. Faculty members of the schools do not accompany students to the regional and farm hospitals which provide the training.

On satisfactory completion of the five years of professional training, as determined by comprehensive examinations at the end of each school year, the student is issued a diploma which qualifies the recipient to be examined by the Ministry of Agriculture for licensure to accept employment as a veterinarian. Approximately 3,500 students are graduated annually.

GRADUATE TRAINING

Two graduate degrees, Candidate of Science in Veterinary Medicine, which requires approximately three years of study, and Doctor of Science in Veterinary Medi-

TABLE 2—Curriculum for Russian Veterinary Students During Five Years of Professional Training

First year	Second year	Third year	Fourth year	Fifth year
Physics	Anatomy	Pathology	Internal diseases	Some courses of 4th year continued
Chemistry	Histology	Clinic	Surgery	Organization of services
Zoology	Physiology	Pharmacology	Epizootiology	Jurisprudence
Biology	Organic chemistry	Obstetrics	Parasitology	Economics of animal husbandry
Anatomy	Biochemistry	.....	.....	Radiology
.....	Microbiology	.....	.....	Diseases of small animals
.....	Animal breeding	.....	.....	Diseases of bees
.....	Animal husbandry	.....	.....	Diseases of fish

A regional diagnostic laboratory in the Ukraine.

cine, which generally requires five to ten years of study, are offered. Graduate study consists of a minimum of formal course work. Emphasis is on a research problem for which the student prepares and defends a thesis. The graduate degree, Doctor of Science, conveys honor and qualifies the recipient in part to full professorship on a teaching or research faculty.

PHYSICAL FACILITIES AND TEXTBOOKS

Separate buildings for basic sciences and clinics are provided. Although the actual floor space appeared to be adequate, laboratory equipment for basic sciences, radiology, and surgery were deficient. Several schools, however, indicated that plans were being formulated for improvement of laboratory facilities.

Institutional libraries are strong in publications in the Russian language; they subscribe to many German, French, British, and American periodicals. The *American Journal of Veterinary Research* and the *Journal of the American Veterinary Medical Association* show considerable popularity and use.

Eminent professors prepare manuscripts for textbooks. These are submitted to a central governmental agency for approval. Several textbooks in the same science may be approved for use. Instructors select one or more textbooks from approved lists. Textbooks of American origin are not in use.

FELDSHERS

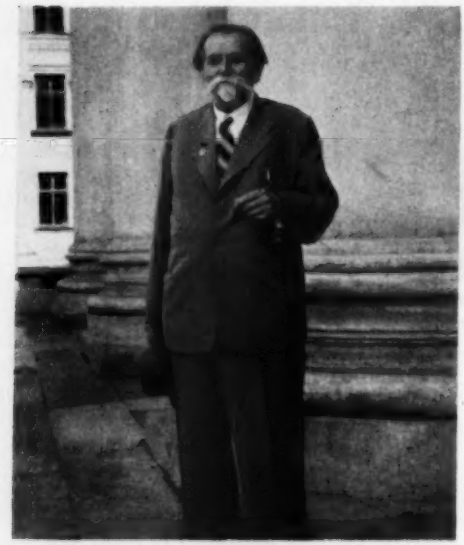
Veterinary assistants with specialized training are designated as "feldshers." They receive approximately three years of practical training in schools of veterinary medicine. There are approximately 49,000 feldshers in the entire country.

Feldshers who demonstrate a high degree of competence and aptitude may return to a school of veterinary medicine to receive regular veterinary medical education.

Veterinary Medical Research in the U.S.S.R.

A considerable amount of Russian agricultural resources is devoted to research on diseases of animals. The country has 158 institutes, 650 experiment stations and laboratories, 99 agricultural schools, and 34 veterinary medical schools. All are engaged, to a degree, in studying animal diseases and ancillary animal sciences. A total of 16,400 employees, including veterinarians and the various discipline specialists, such as microbiologists, virologists, anatomists, physiologists, parasitologists, chemists, nutritionists, and zoologists, is engaged in agricultural research under supervision of

Some staff members of the State Science Control Institute and the American delegation, Moscow. At the extreme right is Professor V. N. Syurin, who is director of the State Science Control Institute.



Academician K. I. Skryabin at Moscow.

the All-Union Academy of Agricultural Sciences. In veterinary medicine, the principal effort is toward the study of infectious and contagious diseases.

Currently, Academician K. I. Skryabin, a veterinarian, is vice-chairman of the All-Union Academy of Agricultural Sciences. He is of world renown for extensive researches on helminthology and bears the unofficial title of affection, "father of helminthology."

ORGANIZATION

Research is performed at the national and republic levels. Administrative direction is provided by the Ministry of Agriculture and the All-Union Academy of Agricultural Sciences. The latter has three important institutes: (1) All-Union Institute of Experimental Veterinary Medicine (VIEV); (2) All-Union Institute of Sanitation and Ectoparasitology; and (3) All-Union Skryabin Institute of Helminthology.

The All-Union Institute of Experimental Veterinary Medicine is probably the largest of the research institutes for animal diseases. The institute was established 40 years ago and includes facilities at Moscow and Lisey Island. The Moscow laboratories perform basic research on diseases. At Lisey Island, vaccines for foot-and-mouth disease are applied to experimental animals, while at Izhma basic laboratory data are applied to reindeer. Four hundred employees, including many veterinary medical specialists, operate the institute. Specialized research is performed in laboratories of virology, museum of cultures, protozoology, pathology, physiology, pharmacology and chemistry, physiology and pathology of reproduction, antibiotics, diseases of large animals, diseases of hogs, diseases of horses, diseases of poultry, zoological hygiene, brucellosis, foot-and-mouth disease, tuberculosis, and rickettsia and tularemia. Professor Ya. R. Kovalenko is director and was a member of the reciprocal Russian delegation to the United States.

The All-Union Institute of Veterinary

The basic science building of the Moscow Veterinary Academy, Moscow.

Herds of Aulie Ata (above, left) and Red Steppe (right) cattle on a state farm in the Ukraine.

Swine on pasture on a state farm of the Ukraine.

Four prominent breeds of dual purpose cattle in the U.S.S.R. are the Symenthal, Red Steppe, Aulie Ata, and Lebidinsky.

The bull shown at the right and the cow at the lower left are of the Lebidinsky breed.

A cow of the Symenthal breed in the Ukraine (lower right).

Sanitation and Ectoparasitology is located in Moscow and is under the direction of A. A. Polyakov, who is also editor of the journal *Veterinarya*. The institute contains laboratories of veterinary sanitation and rodenticides, disinfection and utilization, entomology and insecticides, arachnology, milk and meat inspection, mycology, chemistry, and radioisotopes. As indicated by names of the laboratories, the institute performs research on processes which are integral parts of veterinary medicine. One hundred people, including 45 scientists, are employed at the laboratories.

The All-Union Skryabin Institute of Helminthology is located currently toward the center of Moscow and will relocate soon in new facilities at the Lenin Hills suburb of Moscow. Founded in 1919, the institute operated, grew, and expanded under the leadership of Academician K. I. Skryabin. It was the first institute of helminthology and from it other related institutes of helminthology developed. The Institute contains laboratories as follows: general, swine parasitism, ruminant parasitism, biochemistry and physiology of parasites, phytohelminthology, morphology, and a museum which contains classified and catalogued parasites from 120,000 necropsies. In the past, the major activities have been collection and classification of parasites. While taxonomy is being continued, current research includes the study of therapy of parasitized animals and physiology of parasites. Since the retirement of Academician Skryabin, the institute has been directed by V. S. Yershov.

In addition to the National Research Institutes, many republics support laboratories for the study of animal diseases. These include the Leningrad Veterinary Research Institute, the Ukrainian Institute of Experimental Veterinary Medicine, Kharkov Zootechnical Institute, the Kharkov Research Institute of Animal Husbandry of Forest Steppe and Woodlands, the Georgian Research Institute of Animal Husbandry and Veterinary Science, and the Kazakh Veterinary Research Institute. The latter organization, located at Alma Ata, Kazakhstan, is renowned for investigations of diseases of sheep. Its director, Professor A. Ya. Dzerzhinsky, was a member of the reciprocal Russian delegation to the United States.

Zootechnical research institutes study problems of animal husbandry and have developed many new breeds of domestic animals. Four prominent breeds of dual purpose cattle are Symenthal, Red Steppe, Aulie Ata, and Lebedinsky.

RESEARCH FACILITIES

Buildings and floor space at most laboratories were adequate for housing laboratories, offices, and small laboratory animals. Laboratory equipment was of good quality but not unusual in type. The usual laboratory equipment, such as microscopes, centrifuges, microtomes, colorimeters, and pH meters, was present in all laboratories. Two separate laboratories were each equipped with an electron microscope.

The State Science Control Laboratory, under the direction of Professor V. N. Syurin, contained a well-equipped radioisotope laboratory. Other research organizations indicated imminent development and establishment of radioisotope laboratories to expedite research projects on animal diseases.

Facilities for maintaining experimental cattle, horses, sheep, swine, and poultry were not present at veterinary research laboratories. Invariably, officials indicated that experimental facilities for large animals were available at remote locations and that scientists commuted between laboratories and large animal facilities. Attempts to visit them were unsuccessful. The probability is that exclusive facilities for research on large animal diseases are not provided at most laboratories, and that in case of acute need, large animals and facilities at state and collective farms can be conscripted for utilization.

DISEASES

Animal diseases of economic importance and subject to experimentation include the following: hog cholera, Newcastle disease, foot-and-mouth disease, equine encephalomyelitis, equine infectious anemia, goat pneumonitis, rabies, canine distemper, sheep pox, fowlpox, tuberculosis, paratuberculosis, brucellosis, vibriosis of cattle, anthrax, swine erysipelas, contagious agalactia, tularemia, trichomoniasis of cattle, babesiosis, coccidiosis, theilariosis, and trypanosomiasis.

Diseases which have been eradicated or reduced to low incidence include: glanders, contagious bovine pleuropneumonia, and rinderpest.

The interior of a winter dairy barn (above, left) on a collective farm north of Leningrad.

A summer dairy barn (above, right), fully mechanized, on a state farm in the Caucasus Mountains.

A Russian veterinarian (above) is demonstrating a large animal surgery table which can be manipulated into vertical and horizontal positions.

◀ Small animal kennels in a Moscow animal hospital.

A veterinary ambulatory laboratory (below, left), used for serological diagnosis of brucellosis.

A spraying truck (below) for disinfection of premises.

Important diseases alleged not to occur in the U.S.S.R. are: fowl plague, contagious ecthyma, lip and leg ulceration, enzootic viral abortion of ewes, vesicular exanthema, vesicular stomatitis, avian lymphomatosis, infectious bovine rhinotracheitis, mucosal disease, listeriosis, and histomoniasis of turkeys.

The Application of Veterinary Medicine in the U.S.S.R.

Following graduation from a school of veterinary medicine, Russian veterinarians are eligible for examination for licensure. Examinations are uniform throughout the country and are administered by the Ministry of Agriculture. Subject matter includes basic sciences and clinical practices. Satisfactory performance in the examination conveys licensure for employment or practice as a veterinarian.

NUMBER OF VETERINARIANS AND PERSONAL INCOME

The U.S.S.R. contains approximately 42,000 veterinarians. They are deployed in the same activities as are American veterinarians. Approximately 3,500 new veterinarians are graduated and licensed annually. Feldshers, trained veterinary medical assistants, number approximately 49,000.

Income varies directly with amount of training, professional experience, and competence. At the Moscow Veterinary Academy, income schedules were estimated (table 3).

An agricultural peasant's residence, Georgia.

Currently (1958), the monetary exchange rate is 10 rubles per dollar. Abstract numbers of rubles unrelated to purchasing power have little significance. As

TABLE 3—Personal Incomes of Russian Veterinarians According to Training

Degrees	Rubles/month
Diploma only	1,350
Diploma plus candidate of science	2,800—3,200
Diploma plus candidate of science plus Doctor of Science	4,500—5,000

far as could be determined, the incomes of recently graduated veterinarians were considerably higher than incomes of nonprofessional workers but not sufficient to make available luxuries such as private automobiles.

Socially, veterinarians are given the general prestige of other professional people. While some social stratification probably exists among professional people, Russian veterinarians seem to occupy a social position among Russian professions similar to the social position occupied by American veterinarians among American professions.

EMPLOYMENT

Veterinarians are employed by teaching faculties, research faculties, diagnostic laboratories, hospitals, farms, and public health activities. The veterinary medical school faculties are large and consist mostly of veterinarians, many of whom have received graduate training. Some veterinarians are employed as instructors in zootechnical schools which train students, known as zootechnicals, in animal husbandry. While teaching veterinarians are a small minority group, the total is relatively large because of the large number of schools.

Faculties at the research institutes are composed of veterinarians, many of whom have received advanced training and are classified as veterinary medical specialists. They are engaged almost exclusively in the study of infectious diseases and ancillary basic sciences. Among the latter are: physiology, biochemistry, anatomy, and artificial insemination. Brucellosis, foot-and-mouth disease, erysipelas, and hog cholera are among the diseases which are emphasized in veterinary medical research.

Diagnostic laboratories employ many veterinarians. Each republic consists of

divisions which are subdivided further to form districts. Each district contains at least one diagnostic laboratory which is located strategically for service to veterinarians on farms. Services rendered include necropsies on poultry and domestic mammals, bacterial culturing of diseased organs, and serological tests. At one regional diagnostic laboratory in the Ukraine near Kharkov, four veterinarians, including one woman, were employed. Specialized activities are referred to district laboratories.

District diagnostic laboratories, although few in number, are large and employ large staffs. They provide services in such fields as histopathology, biochemistry, and toxicology. From the district and regional diagnostic laboratories veterinarians may be dispatched to farms to assist in diagnosis and control of animal diseases. Mechanical equipment for disinfecting farm premises with liquid under pressure is maintained at regional and district laboratories.

Each region, in addition to a diagnostic laboratory, contains at least one animal hospital which provides services to both large and small animals. Most hospitals have facilities for indefinite housing of both large and small animals. Large animal surgery includes such operations as cesarian sections, rumenotomies, dental extractions, and tumor excisions. In small animal surgery, hysterectomies, enterotomies, fracture corrections, and tumor excisions are common. Hospitals provide immunizations for both large and small animals. From the hospitals, veterinarians may be dispatched to farms to assist in treatment and control of diseases, in the organization of health programs, and to serve communities as food inspectors. Moscow, a city of 5,000,000 people, has 16 veterinary medical hospitals. There are 65,000 dogs in the city.

Russian agriculture is organized into state and collective farms. State farms average approximately 16,000 acres, while collective farms average about 11,000 acres. Ninety-five per cent of all Russian veterinarians are employed on state and collective farms. Each farm has at least one resident veterinarian or a resident feldsher who is under the supervision of a veterinarian. Farms with extensive animal populations, such as a state farm visited at Frunze which had 25,000 sheep and many cattle, have the services of several resident veterinarians and feldshers. Farm resident veterinarians treat affected animals and, in some cases, have good treatment facilities. Regional hospitals and diagnostic laboratories are utilized. In consultation with veterinarians of regional hospitals and laboratories and with officials of the republic and national ministries of agriculture, broad programs for the eradication of diseases are developed and administered.

Through concerted effort at farm, republic, and national levels, bovine brucellosis has been reduced to a low incidence. The disease has been eliminated from cattle in the Russian Republic and from other republics around the Baltic Sea, and eradication is imminent in other republics. The test, slaughter, and vaccination methods have been utilized. Vaccination of cattle with *Brucella abortus* strain 19 is compulsory. A similar program of test and slaughter of reactors has been used against bovine tuberculosis. The incidence of this disease in most republics is less than one half of 1 per cent of all cattle.

The private practice of veterinary medicine, as well as other professions, is legal. Taxation, however, to private practitioners is sufficiently high to preclude, in most cases, the operation of a private enterprise. Consequently, most, if not all, veterinarians are employed in some capacity by the state.

Many veterinarians are employed for the

Oxen, wagon, and teamstress at a collective farm in the Ukraine. This type of vehicle performs the work of a pickup truck.

inspection of food. Meat is inspected in slaughter houses by full-time veterinary inspectors and on farms by resident veterinarians. Meat which is transferred from farms to city markets is inspected at the market by veterinary inspectors. Market milk is inspected for wholesomeness and quality. The inspection includes determination of total bacteria and sediment.

PROFESSIONAL ASSOCIATIONS

National and republic organizations of professional groups are prohibited. Consequently, Russian veterinary medical associations, corresponding to state and national veterinary medical associations in America, do not exist.

Republic and national organizations in fields of high specialization are permitted. Republic and national associations are organized for fields such as anatomy, virology, physiology, and pathology. Because of the high degree of specialization, the associations are small in membership.

In Russia, specially selected, dual-purpose Red Steppe breed cows averaged 11,000 lb. of milk with 3.96 per cent butterfat. The average production of all cows in Russia is considerably less.—*Agric. Res., U.S.D.A. (Jan., 1959): 5.*

Egg Laying in Total Darkness

Although darkness allegedly inhibits egg production, it did not prevent pullets from starting to lay. When 60 White Leghorn pullets, which had been laying about 12 weeks and were accustomed to alternate periods of light and darkness, were kept in total darkness, egg production dropped from 66 to 23 per cent in four weeks and then rose slightly. A few pullets started laying during the dark period.

When 40 selected hens that were producing at a rate of 80 per cent, under 14 hours of light daily, were alternately given two-hour periods of light and dark for five days, then were placed in total darkness, their production dropped to 20 per cent. In both tests, the hens that quit laying for less than five days produced at a rate of 60 to 77 per cent when they resumed.—*Poult. Sci., 37, (Sept., 1958): 1054.*

Effects of Pre-Slaughter Rest and Electric Stunning

Animals should be well rested before slaughtered since when fatigued they bleed poorly and the chance for putrefactve bacteria and pathogenic microorganisms transgressing from the intestine into the blood and meat is increased. For the best meat quality, large cattle and hogs should be rested 48 hours, calves 20 to 24 hours.

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Stunning of hogs has a tendency to raise the pH of meat by 0.1 when measured after 24 hours, thus helping to accelerate bacterial multiplication. There is unpublished evidence that carbon dioxide stunning is superior to electrical stunning in this respect.—*E. Dennler and Sv. M. Blomquist in Die Fleischwirt., 12, (Dec., 1958): 839 and 840.*

Streptomycin Pantothenate Treatment of Soft Tissue Infections

Pantothenic acid salt of streptomycin was shown to be considerably less toxic for mice, rats, and cats than was streptomycin sulfate. When this pantothenate preparation was employed in the treatment of 116 human patients with soft tissue infections, surgical intervention was required in fewer instances and usually was of less magnitude than ordinarily necessary in such cases.

In susceptibility tests on the microorganisms recovered, more strains were sensitive to streptomycin pantothenate than to the other streptomycin preparations and none were more sensitive to the latter than to the pantothenate preparation.—*Am. J. Surg. (June, 1958): 963.*

Hereditary Ataxia in Calves

Eight calves showing spastic signs were found in two related herds of Holstein-Friesian cattle during a two-year period. The condition became apparent at about 6 weeks of age and was similar in all animals. It was not sex-linked.

All had one common male ancestor which appeared in the pedigrees of both the sire and dam. The ataxia seemed inherited as an autosomal recessive. The only anatomical changes were neuronal degeneration and cerebellar hypoplasia.—*J. Dai. Sci., 41, (Oct., 1958): 1371.*

Fourth Annual Meeting—American Association of Equine Practitioners

The 1958 convention of the A.A.E.P. was held Dec. 15-16, 1958, at the LaSalle Hotel in Chicago, with 147 registrants.

Officers during 1958 were: Drs. Edwin A. Churchill, president; Thomas E. Dunkin, secretary-treasurer; and M. L. Scott, executive secretary-treasurer. Officers elected for 1959 were: Drs. Wayne O. Kester, president; Jordan Woodcock, president-elect; and M. B. Teigland, secretary-treasurer.

Nonveterinarians participating in the program included officials of the various groups that are active in the promotion and regulation of horse racing. Summaries of some of the papers of particular interest to veterinarians follow.

Dr. R. E. Rebrassier, president of the AVMA, remarked in his dinner speech that pioneer work in veterinary medicine and surgery was accomplishd with the horse. He commended the A.A.E.P. for the progress made in disseminating information to the membership and in improving relations with the racing industry.

He suggested that equine practice should receive adequate consideration in program planning, both at the national and state levels; also that schools have been too hasty in revising curriculums insofar as the horse is concerned. While this phase of veterinary medicine should not be overemphasized, its potentialities should be recognized and undergraduates should be trained so that they are capable of undertaking equine practice.

Presidents of the American Association of Equine Practitioners—Drs. Jordan Woodcock (left), 1960; Wayne O. Kester, 1959, and E. A. Churchill, 1958.

The Grayson Foundation

When the horse dropped out of economic life and, consequently, from the large animal clinics, a lack of basic research naturally followed. However, in the last five years there has been an increase in clinic admissions, but of an entirely differ-

Officers and executive board members of the American Association of Equine Practitioners

Standing (left to right)—P. J. Meginnis, Rosello, Ill.; Jack K. Robbins, Thousand Oaks, Calif.; Floyd F. Mendenhall, Julesburg, Colo.; James T. O'Connor, Wrentham, Mass.; Thomas E. Dunkin, past-secretary, Chicago, Ill.; Anthony E. Raimonde, Mesa, Ariz.; Joe E. Burch, Miami Shores, Fla.; Francis J. Milne, Guelph, Ont.; Neal D. Lusk, Crete, Ill.; Horace N. Davis, past-president, Lexington, Ky.; J. B. Chassels, Brampton, Ont.; and William B. Farquharson, Sunnyslope, Ariz.

Seated—Jordan G. Woodcock, president-elect, Rye, N.Y.; M. B. Teigland, secretary-treasurer, Miami, Fla.; E. A. Churchill, past-president, Centerville, Md.; William O. Reed, Elmont, L.I.; M. L. Scott, executive secretary, Akron, Ohio; and Wayne O. Kester, president, Denver, Colo.

ent sort. They have been racing and pleasure horses.

From a sport for the few, racing has grown into an industry for many. Therefore, an adequate and realistic research program is needed. The Grayson Foundation was set up for just this job, with a broad charter to include collection of funds for research and for dissemination of the information. Since everyone looks toward the race tracks for financial aid, there must be a program that can be shown to be of benefit to them. States that have been interested in racing from a tax point of view must be shown where they can help. Practicing veterinarians should take the lead in this planning, for the research findings will be used in the field by them. Already, veterinarians have been added to the Foundation's advisory board. We need to know what projects will do the most good for the horse industry, and how to get results as quickly as possible.—*Clarkson Beard, President, Grayson Foundation, Inc.*

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Laboratory Tests for the Equine Practitioner

In regard to laboratory tests conducted for racing horses, normal values given for the horse in textbooks are usually meaningless from a diagnostic standpoint. More exacting values must be used and must be determined not only from available literature but also from personal experience. In some instances, the laboratory must establish its own values. Some of the normal blood values used in our laboratory are listed (table 1).

TABLE 1—Some Normal Blood Values for Racing Horses

Hemoglobin	13.5-15.5 Gm./100 ml. blood
Erythrocytes	8:5-11.0 (av. 9.0) million/cmm.
Leukocytes	6-11 thousand/cmm.
Erythocyte packed cell volume	
Weanlings	35-37 mm.
Yearlings	37-40 mm.
Other ages	40-45 mm.
Differential count	
Polymorphonuclear cells	45-60 %
Lymphocytes	35-55 %
Monocytes	1-2 %
Eosinophils	1-3 %
Basophils	0-1 %

Laboratory results may be of little value and possibly misleading if the specimen is not properly collected or if it is altered in transit. When mailed, specimens should be chilled, then sent first class, and marked for special delivery or special handling.

Representative specimens should be obtained; e.g., blood should be obtained when the horse is at rest, not immediately after a race or following feeding. If the animal is excited and considerable difficulty is encountered in taking the sample, the hemoglobin and red blood cell count may show concentration of a physiological nature.

Urine samples should be collected following the cooling out after racing or working. In race horses, there is frequently a local irritation of the urinary bladder. This results in a pH of 7.5 to 8.2 and the presence of excessive quantities of calcium carbonate and phosphate salts in the urine. Bacteriological examination of these specimens usually indicates the presence of gram-positive hemolytic micrococci. It may be advisable to alter the high alkalinity by giving acid salts and treating the infection with an appropriate antibiotic.—*David Crisman, Philadelphia, Pa.*

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Techniques in Orthopedic Surgery

The practice of aseptic surgery requires a strict observance of preoperative sterilization of surgical materials and cleansing of the operative area; of rigid adherence to the ritual of cleansing the hands and arms; and of strict observance of aseptic principles during the operation. Simplicity should characterize all aseptic procedures and the rules and methods adopted should be rigidly observed.

The use of synthetic narcotics and tranquilizers make it possible to control excited animals and thereby avoid excessive damage to tissues. Many of the so-called "simple" fissure-type fractures may be badly comminuted through excitement. Except for the few horses that do not respond to the use of tranquilizers, we are able to temporarily immobilize the fractures and return the horse to a stable in a horse ambulance or by other methods. When kept in a tranquilized state, they may be properly prepared for surgery.

Surgery which is simple and does not require complete immobilization can and should be done with the horse in a standing position. For extensive bone and joint surgery, complete anesthesia is required,

because without it (1) aseptic technique cannot be followed; (2) movement of the horse cannot be controlled; (3) adequate ligation of blood vessels is impossible; (4) the surgical technique may become more complicated as it progresses; and (5) satisfactory closure of the operative area may be difficult.

A No. 40 clipper blade permits close enough clipping so that shaving is eliminated. A thorough scrubbing of the operative area is more important than the application of the antiseptic.

When the edges of a surgically clean wound are carefully coapted and kept at rest, prompt healing by first intention will follow unless the wound becomes infected. Prevention of wound infection demands that everything used in the performance of an operation must be as germ-free as possible, and that the field of operation be protected from contamination. The use of sterilized rubber gloves is imperative, but does not preclude a thorough preparation of the hands before they are thrust into the gloves. Masks, caps, and operating gowns should be used in equine practice, also drapes to protect the operative area against contamination. We use a drape made of transparent plastic material. It is applied by spraying an antiseptic adhesive lightly on the skin of the operative site, then lightly pressing on the drape. The adjacent area is covered with ordinary cloth drapes. This plastic material is easily incised, does not prevent palpation of tissues, and gives skin-margin contact without the necessity of using special clamps or other fixation devices.

For skin closure, stainless steel suture material is preferred. It may puncture rubber gloves and it is not the most rapidly applied, but for over-all satisfaction it has been superior. During postoperative care, we use nothing but sterile dry sponges for dressing. Skin sutures are removed in approximately six or seven days.—*William O. Reed, Elmont, L. I.*

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Fertility in Brood Mares

Sterility is a harsh word in the Lexington area. Too often an aged mare which is declared barren, and is disposed of, shows up the next spring with a big, good-looking colt for somebody else. As far as I am concerned, any mare can conceive and have a live foal. The chances may be ever so slight, but there is always the possibility.

A prospective brood mare should be in good thrifty condition, regardless of age. If she is in poor condition, the teeth, feces, and blood should be examined. It is helpful to know: (1) how many years the mare has been barren; (2) whether any abortions were early or late; (3) what horse she was bred to and how many times; (4) if her heat periods were regular; (5) if the last foal and the delivery were normal; and (6) if there have been vaginal discharges and treatment for uterine infections.

Habitual abortion is not uncommon, and where it occurs early in the gestation period, appropriate hormone therapy often is effective.

A regular and well-defined estrous cycle indicates that the ovaries are functioning normally and that ovulation is probably taking place on schedule. Absence of or poorly defined heat periods would indicate ovarian dysfunction. A history of dystocia, embryotomy, or prolapsed uterus may affect the future productive expectancy of a mare and will lend an appreciable degree of accuracy to your prognosis. The ovaries of the mare vary considerably in size, shape, and consistency and are continually changing, so that a perfectly normal ovary has many normal sizes and shapes. Their condition should be estimated on the basis of performance rather than conformation. By means of the vaginal speculum, inflammatory exudate, scars, and adhesions should be looked for especially in and around the cervix. If the mare is in estrus and the cervix relaxed, cultures are made if the need is indicated. The patency of the cervix may be tested by inserting a gloved finger. Adhesions are sometimes present but cannot be seen. The bacteriological culture of cervical secretions has become a routine procedure. Unquestionably, genital infections are responsible for some abortions and failures to conceive. Also, many foals are seen with clinical or subclinical diseases attributable to intrauterine infection. However, there is a growing feeling that culturing can be overdone.

It isn't so much what you use in treatment of genital infections as how you use it. The problem is more mechanical than medical. It is necessary to remove all debris possible, then with the help of an agent to reduce surface tension and apply the pre-

ferred drug to the infected surfaces. This procedure, repeated often enough, ordinarily gives satisfactory results.

In the treatment of genital infections, nitrofurazone, chlorhexidine diacetate, and sulfamethazine are efficacious against most of the pathogens commonly involved. When pus is present, the uterus is irrigated with saline solution or mild antiseptic solution and is drained as well as possible, then medication is instilled. This is repeated daily or every other day as indicated by the discharge. A differentiation between cervicitis and metritis should be attempted so the uterus will not be treated unless necessary. One or two colonies on a culture from a perfectly normal appearing cervix does not rule out breeding the mare, in my opinion.—*William R. McGee, Lexington, Ky.*

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Equine Diseases and Public Health

All veterinary practitioners contribute to the public health. A specific discussion of the relationship of equine diseases and equine practice to public health takes into account several peculiarities which set this area of interest apart from others. These peculiarities are: (1) show or race horses are extremely transient; (2) they are repeatedly brought together in large groups and shortly dispersed to many points to mingle with new groups; (3) they are repeatedly housed in different quarters, oftentimes recently vacated by other horses; (4) the men occupationally associated with these horses are in daily intimate contact with them; (5) the race track or show community is normally a closely contained group within a larger community or set apart from surrounding areas; (6) horsemen are quick to try any new remedy, procedure, or device in the treatment of their own stock; and (7) equine practitioners as a group have an excellent opportunity to repeatedly observe or follow a horse's physical condition through its entire life span. These peculiarities, from a public health standpoint, present an interesting epidemiological picture.

The role of the horse in public health is smaller than other groups of animals. However, in light of new interrelationships between man and animals, there is no assurance that the horse will not be brought into prominence as an important reservoir of some disease. The ever-present possibility of the introduction of some foreign disease cannot be overlooked.

The principal equine diseases which are considered to have potential public health significance are: encephalomyelitis, leptospirosis, ringworm, sporotrichosis, histoplasmosis, cryptococcosis, actinomycosis, rhinosporidiosis, epizootic lymphangitis, aspergillosis, anthrax, vesicular stomatitis, glanders, melioidosis, brucellosis, rabies, salmonellosis, tuberculosis, pseudotuberculosis, pasteurellosis, swine erysipelas, sarcocystitis, sarcoptic mange, trypanosomiasis, endemic relapsing fevers, and schistosomiasis. The last three are not considered to be potential threats in the United States.

In addition to aiding in the control of equine diseases which may be transmitted to man, the equine practitioner can contribute to the health and safety of his clients in other ways. He can, through practice or advice, influence the use of ultrasonic and radiographic devices and various drugs and chemicals, all of which can be hazardous in the hands of the unskilled and uninformed.

Thus, the equine practitioner, being the authority on diseases and conditions involving the horse, must be prepared to assume the responsibility of accurately counseling his clients and informing authorities on the health implications of the diseases and conditions he encounters. His endeavors in protecting man's health will present additional resultant benefits to the racing industry and other groups.—*Col. Charles H. Snider, U.S. Air Force, Washington, D.C.*

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Bone and Joint Injuries

Large strides have been made in the treatment of bone and joint injuries in the past few years. The relationship between veterinarians and insurance adjusters will have to be completely changed if we are to continue this progress.

Until recently, it was customary to destroy horses that had suffered a fracture. Today, we should go to the insurance companies and ask that we be allowed to try to save the horses which ordinarily are destroyed. Some will be saved and much experience will be gained even from those in which the treatment is not successful.

When a horse suffers a fracture on the

racetrack, the problem is not so much how to immobilize it while it heals, but how to get the horse safely to a place where it can be treated. A good first-aid splint is needed.

The treatment of long-bone fractures should be considered separately from short-bone or chip fractures. Fractures of the third carpal bone respond well to fixation with a screw. The ideal time for operating is ten days after the fracture occurs. The best way to handle fractured splint bones is to remove the distal portion of the bones starting at a point proximate to the fracture. If the fractured segment is not removed, it may interfere with the function of the suspensory ligament.

To do good work, it is necessary to do a lot of it. We will not make progress by declining to treat bone and joint injuries in horses just because they are highly insured.—*Jacques Jenny, University of Pennsylvania, Philadelphia.*

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Panel on Orthopedic Surgery in the Horse

Good diagnostic radiographs are essential for proper diagnosis and surgery. To get good ones, it is important to eliminate motion of the patient and equipment. Noises may cause difficulty. Sometimes a horse hears the buzzer of the timer and thinks he is back on the race track.

Distortion can be minimized by making sure that the central ray is perpendicular to the part to be radiographed. The longer the cone, the easier it is to align the central ray. Detail must be visible. Drugs containing heavy metals of any kind should not be given to the horse before radiography, and the animal should be clean. Slow speed screens give better detail. By all means, hold the cassette steady and be sure to use lead gloves.

Reading the radiograph is sometimes difficult. As far as exposure is concerned, err to the overexposure side. Keep developing fluids at 68 F., if possible. Take a little more time to develop—e.g., five minutes instead of three—and you will get better quality exposures.

With respect to secondary radiation, the cone contributes to the protection of the operator.

Radiographic anatomy is important. Any anatomic part should be viewed from at least two angles.

With respect to eye accommodation, a 14- by 17-inch viewer must be masked down so that no light comes around the radiograph from the viewer source. Always wait for the film to dry before making a final diagnosis.—*D. D. Delahanty, Ithaca, N. Y.*

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Some Aspects of Food and Drug Administration Activities

All of us should be aware of the activities of the Food and Drug Administration (F.D.A.) and what they mean to us. One who is asked to serve as a clinical investigator for a drug manufacturer should not be influenced by the fact that he gets a free supply of the drug or because he is a friend of the supplier. There is no excuse for giving a more favorable report on a drug than it merits. This would defeat the whole purpose of the Federal Food, Drug, and Cosmetic Act which was established by the United States Congress for your protection. Your report will likely become a part of a New Drug Application and, of course, it is a federal offense to give false information to the government.

Enforcing truthful and informative labeling is one of the important functions of the Food and Drug Administration. Labeling goes further than the sticker on the bottle. Advertising in magazines may also be considered labeling, under some circumstances, although the Federal Trade Commission has primary jurisdiction over magazine advertising. Some publications do a much better job than others in screening ads for claims made by manufacturers.

The Veterinary Medical Branch of the Food and Drug Administration has no direct control over biological products; these are controlled by the Department of Agriculture. Neither does the F.D.A. have anything to do with radio and television advertising—the Federal Trade Commission is responsible in this area. Some mail advertising comes under F.D.A. jurisdiction—that which does not is controlled by the Post Office Department.—*Fred J. Kingma, Washington, D.C.*

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Abdominal Surgery of the Horse

Many veterinarians are still unwilling to invade the abdominal cavity of the horse. Some conditions that require this type of surgery are intestinal intussusception, en-

teroliths, and eversion of the uterus. There are three approaches: flank, ventral midline, and ventral paramedian.

Flank incisions can be used on the standing horse. This is useful when replacing everted horns of the uterus. Also, an occasional impaction can be broken down by this approach. A disadvantage is the problem of hemorrhage and postoperative oozing, with the subsequent separation of the flank musculature. Sometimes it is difficult to suture flank incisions, due to the thickness of the wall structures and the abdominal pressures.

The safest and simplest approach is the paramedian, with the horse on its back. The skin incision is made a hand's breadth from the midline. The fascia is then incised and the muscles are separated by blunt dissection, with a minimum of trauma. The disadvantage is the limited size of the opening.

The ventral midline incision provides the greatest exposure. However, there is a greater tendency to postoperative herniation. The horse must be cast on its back and the legs draped to prevent dirt falling into the incision. Succinyl choline may be given by intravenous drip to provide relaxation. This is started during the suturing process. Because reactions with stainless steel wire may be undesirable, No. 3 catgut is used for buried sutures. Dead spaces must be avoided. Stainless steel (No. 1) mattress sutures are used to relieve tension on the suture line. These are tied externally and are removed in ten days.

Postoperative shock occurs frequently in horses. Therefore, in all cases gelatin or dextrose-saline solutions should be given intravenously during surgery. Cortisone preparations may also be indicated.

There is everything to gain and nothing to lose when you attempt to correct intussusceptions and torsions by means of surgery.—*J. D. Wheat, University of California, Davis.*

Trimeglamide—New Type Sedative and Soporific Drug

Drugs commonly used for hypnotic action in the practice of medicine in human beings are often ineffective when similarly applied in dogs and cats. These species show ataxia accompanied frequently by frank excitement during induction. Similarly, on spontaneous awakening or active arousal, a similar period of disorganized activity results.

A new drug having the proposed generic name "trimeglamide," demonstrated the ability to induce in animals a state of somnolence which could not be distinguished from the physiological state of sleep. This action was neither preceded nor followed by skeletal muscle involvement.

In dogs and cats, the oral soporific dose of trimeglamide was 50 mg. per kilogram of body weight; this dose had a latency of 30 to 90 minutes and a duration of two to six hours. When asleep, the animals could be aroused easily and would respond in a normal manner to external stimuli. If left alone, they would fall asleep again in a few minutes. There was no indication of skeletal muscle involvement or neurological abnormalities and no effects on blood pressure and heart rate. A five- to ten-fold increase in soporific dose resulted in restlessness and disorientation instead of sleep.—*G. Cronheim et al., Science, 128, (Dec. 19, 1958): 1570.*

Persistence of Fetal Hemoglobin

The postnatal persistence of bovine fetal hemoglobin (F) and its relation to adult hemoglobins A and B was investigated by electrophoretic methods.

At birth, hemoglobin F made up 41 to 100 per cent of the total hemoglobin of 23 calves. It was replaced entirely by hemoglobin A in 14 bull calves and 4 heifer calves at the average age of 65 and 97 days, respectively. The disappearance of hemoglobin F was obscured by the simultaneous appearance of hemoglobin B, which had the same electrophoretic mobility under the conditions used.—*J. Dai. Sci., 41, (Nov., 1958): 1527.*

What Is Interferon?

Interferon is a substance produced by the interaction of inactivated (heated) influenza virus when incubated with chick chorioallantoic membranes *in vitro*. It inhibits the growth of a variety of viruses, apparently by interfering with the virus multiplication cycles within the cells.

When cells are treated with interferon, and are then infected with live virus, they produce interferon instead of live virus.—*Nature, 182, (Oct. 18, 1958): 1073.*

What Is Your Diagnosis?

Because of the interest in veterinary radiology, a case history and radiographs depicting a diagnostic problem are usually published in each issue.

Make your diagnosis from the picture below—then turn the page ▸

Fig. 1—Radiograph of stifle (medial view) of the left hindleg of the German Shepherd Dog.

Fig. 2—Radiograph of stifle (plantar view) of the dog's left hindleg.

History.—A male German Shepherd Dog, 3 years old, had shown periodic lameness of the left hindleg for several months. Occasionally the dog refused to bear weight on the leg. Examination showed the lameness to be in the stifle joint, and mediolateral and plantodorsal radiographs were taken (fig. 1, 2).

Here Is the Diagnosis

(*Continued from preceding page*)

Diagnosis.—Osteochondritis dissecans (joint mouse) in a German Shepherd Dog (fig. 3, 4).

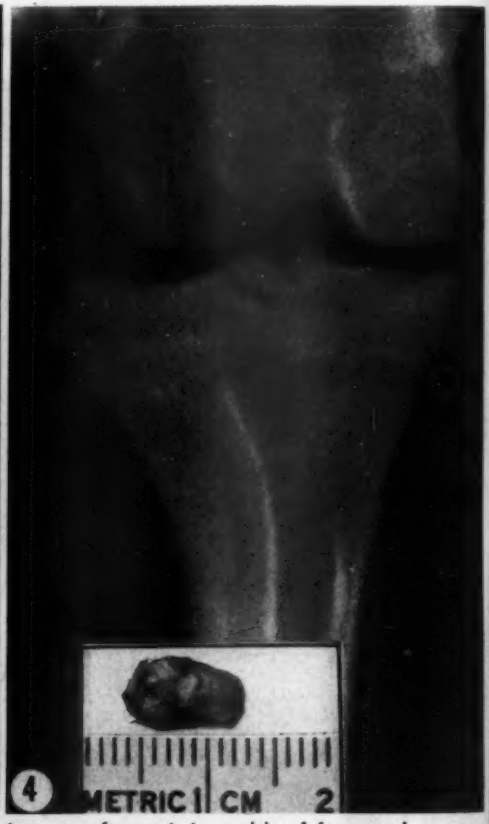


Fig. 3—Radiograph of stifle, medial view (1) showing area of necrosis in condyle of femur, and (2) "joint mouse" lying on the condyle of the tibia.

Fig. 4—Radiograph of stifle, plantar view (1) showing area of necrosis on lateral condyle of femur, and (2) "joint mouse" lying on the condyle of the tibia. Insert—Photograph of the "joint mouse" after removal.

Comment.—In man, this condition occurs during adolescence or in early adulthood. It is characterized by aseptic subchondral necrosis with separation of a small triangular fragment from the articular cortex of the bone. Such an injury is thought to be related to trauma and interference with the blood supply to the affected area. The articular surface most frequently affected in man is the medial condyle of the femur, although other joint surfaces, including the lateral condyle, may be affected. The tibial condyles are not affected.

Radiographically, the articular cortex shows a small, roughly triangular area. At first, separation is not complete and the fragment is held in place; later there

is complete disunion and the fragment is extruded into the joint cavity, becoming a "joint mouse." If the fragment interferes with motion, it may be removed surgically. The area on the articular surface heals satisfactorily.[1]

In the case shown, the lesion occurred on the lateral condyle, in contrast to the medial condyle as is most frequent in man. Surgical removal of the "joint mouse" (fig. 4, inset) relieved this dog of lameness. The incidence and predominant location of the lesion in dogs is not known.

This case was submitted by Drs. T. J. Lafeber, Jean Beckwith, and D. R. Strombeck, Niles Animal Hospital, Niles, Ill.

Our readers are invited to submit histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

[1]Sante, L. R.: Principles of Roentgenological Interpretation. 10th ed. Edward Bros., Ann Arbor, Mich. (1955): 66-67.

Peritoneal Mice

Structures occasionally found free in the peritoneal cavity, called peritoneal mice, may be fibrinoid, fatty, or calcareous bodies arising as a result of organic change. One calcified mass was believed to be a woman's missing left ovary; another, a detached subserous uterine fibroid, and another, an encysted blood clot probably from a tubal abortion.

An ovoid mass weighing 67 Gm., found in an old man, consisted of a core of calcium phosphate encased in fibrinoid layers, and was believed to have arisen from foreign matter extruded through a perforated ulcer which had been closed by adhesions. From another man, an ovoid hard mass, 2.0 cm. in length, with a calcified core, was believed to represent a sloughed gangrenous appendix.—*Am. J. Surg. (Oct., 1958): 588.*

Acute Pulmonary Emphysema in Cattle

While acute pulmonary emphysema is associated with a specific syndrome, it is not necessarily a specific disease. The ration of affected cattle should be changed, irrespective of the possible cause of the condition. Feeding of old hay is recommended, especially if the cattle have been grazing lush pasture. Under such pasture conditions, we have failed to detect the disease in the suckling calves of affected cows.

Treatment other than feed change is often dangerous, because handling promotes further respiratory embarrassment. An often overlooked but valuable treatment is the injection of oxygen into the trachea, through its wall, by means of a 16-gauge needle attached by rubber tubing to an oxygen cylinder.

In this disease, as in shipping fever, parasitic bronchitis, and others, the preexistence of undetected proliferative lung changes radically affects prognosis. More research is needed in the field of proliferative pneumonia and chronic pneumonia.—*Iain M. Paton, M.R.C.V.S. Kansas City, Mo., at the 1959 meeting of the Iowa V.M.A.*

Endocrine Dysfunction Due to Newcastle Disease Virus

The ovaries and pituitary glands of chickens with Newcastle disease were examined. The pituitary glands showed degranulation of certain cells, but no inflammation. The ovaries showed edema, degeneration of the follicles, inflammatory cells, and vacuolization in some areas but were normal in others. Interference with ovulation was probably due to general debility as well as to oophoritis.—*F. Pasley and J. Auer in Canad. J. Comp. Med. (Feb., 1958): 44.*

Toxoplasmosis in Hares in Japan

Of 13 hares in one colony, 8 died within a short period with acute toxoplasmosis. There were no nervous signs, and no subclinical or latent infections were recognized. Toxoplasma were found in the liver, spleen, and mesenteric lymph nodes. This is the first report of the disease in hares in Japan.—*Jap. J. Vet. Res., 6, (Sept., 1958): 164.*

Intestinal Strangulation in a Shetland Mare

A Case Report

L. A. SNIDER, D.V.M., and D. P. KING, D.V.M.

New Palestine, Indiana

On June 9, 1958, a call was answered to assist a registered Shetland mare suffering from colic. The mare was 5 years old and had been bred two months. The pregnancy, if existent, would be her third. She had been found sick, lying on her side in the pasture, about one hour before our examination began.

CLINICAL SIGNS

The pony's temperature was 100.3 F., the pulse slightly quickened, respiration moderately accelerated, the conjuctivae faintly injected, and intestinal sounds were absent. Spasmodic cramping was exhibited, at which times she would buckle at the knees and hocks and twist sidewise. The attendant at the halter prevented her from lying down. These pains were two or three minutes apart and mild attempts at defecation were evidenced frequently. Dejection was apparent during relief periods.

Methyl atropine nitrate (7.5 mg.) was given intramuscularly, but no relief had been obtained 30 minutes later. Repeated auscultation of the abdomen revealed no intestinal sounds. Rectal examination was then attempted. At the greatest possible penetration with the arm, a loop or arch of intestine could be palpated. Although it could not be caught between the thumb and fingers, it could be touched or bumped. It was characterized by a firmness or heaviness, as though filled with finely ground feed or sawdust, and yet had a rubbery quality.

The tentative diagnosis was obstruction of the small intestine.

The prognosis was unfavorable.

PROCEDURE

The owner was advised that surgical intervention offered the only hope of relief. The patient was loaded in a truck and brought to our office-clinic. The surgical pack was sterilized by autoclaving at 15 lb. pressure for 20 minutes.

Anesthesia was produced with a combination of chloral hydrate, pentobarbital sodium, and magnesium sulfate given intravenously to effect. The mare was placed in left lateral recumbency, and the right flank region was closely clipped. The area was scrubbed with an antiseptic solution and shrouded with sterile sheet material.

About 3 inches behind the last rib, an 8-inch incision was made through the skin musculature and peritoneum. The loop of small intestine involved was easily identified by its distention and cyanotic appearance. It was found that strangulation had occurred when a loop of intestine became herniated through a rent in the mesentery near its dorsal attachment. The point of strangulation could not be raised out of the incision. In attempting to raise it, however, the rent in the mesentery was suddenly enlarged and the strangulation was relieved immediately. While attempting to locate the tear in the mesentery, it was determined that approximately 4 ft. of small intestine had been herniated. The torn mesentery was not easily located, and since the rent was now obviously quite large but without evidence of hemorrhage, we elected to attempt no further repair.

The peritoneum was closed with a continuous suture of No. 1 medium chromic catgut, and the skin and musculature with interrupted figure-8 sutures, using ⅛-inch umbilical tape. Tetanus antitoxin, 1,500 units, was administered immediately and antibiotics (penicillin and streptomycin) were given intramuscularly each day for the next four days. The sutures were removed on the ninth postoperative day.

Recovery was uncomplicated, and there has been no recurrence of colic.

Drs. Snider and King are general practitioners in New Palestine, Ind.

Transfer of Sheep Ova

In over 200 ewes of two breeds, superovulation was induced by injections of pregnant mares' serum, with or without progesterone. Pregnancy up to 21 days was maintained as well in these ewes when superovulation was hormonally induced during anestrus as when it was likewise induced in the breeding season.

When the ova were recovered by laparotomy from the treated ewes, 49 to 72 hours after mating, over 75 per cent had been fertilized and 80 per cent of these continued to develop into normal fetuses when transferred to the uteri of recipient ewes.—*Vet. Bull. (Nov., 1958): Item 3777.*

Successful Repair of Concurrent Humeral and Tibial Fractures in a Mature Great Dane

CHARLES F. REID, D.V.M., and RODNEY C. HANSON, D.V.M.

Army Chemical Center, Maryland

THIS REPORT concerns the treatment of a mature Great Dane in which there were concurrent left humeral and right tibial fractures. It is reported only because of the somewhat unusual problems encountered in relation to the size of the animal and extent of the injury. This case also emphasizes the fact that an important part of treatment was excellent nursing care by the owner without which recovery would not have occurred. The method of fixation was not unique; the fractures were repaired by simple external coaptation.

CASE REPORT

A male Great Dane, 1½ years old and weighing approximately 140 lb., was struck by an automobile and was presented at the clinic within a few hours following the injury. He appeared to be in pain and made frequent attempts to rise but could not do so. On gross examination, it was noticed that the distal left humeral and anterior right tibial regions were swollen and that these areas were sensitive when palpated.

Fig. 1—Radiograph showing a fracture of the distal third of the left humerus of a Great Dane.
Fig. 2—Radiograph showing a comminuted fracture of the proximal third of the right tibia of the same dog shown in figure 1.

From the Biophysics Division, Chemical Warfare Laboratories, Army Chemical Center, Md.

Dr. Reid is a graduate student, Department of Surgery, New York State Veterinary College, Cornell University, Ithaca, N.Y., and Dr. Hanson is a general practitioner in Dodge Center, Minn.

Some crepitation could be felt in both extremities as they were moved. The dog was anesthetized with pentobarbital sodium and radiographs were taken. There was a

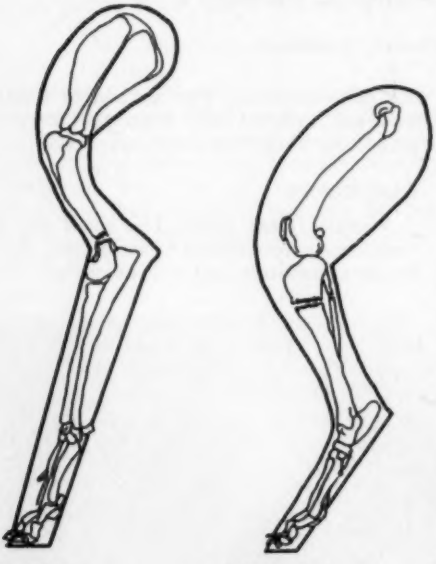


Fig. 3—Design and application of plywood splints in relation to the dog's skeleton.

fracture of the distal third of the left humerus and a comminuted fracture of the proximal third of the right tibia (fig. 1, 2).

Treatment.—Because it was such a large dog and had suffered fractures of two legs, one front and one hind, we decided that euthanasia should be performed. The owner was so informed, but objected strenuously. Although there was only one large intramedullary pin at our disposal, it was thought that this would help immobilize the tibial fracture if placed in the intramedullary canal. It was, therefore, decided that both legs should be corrected with simple coaptation and that a pin be placed in the medullary canal of the tibia.

The humeral fracture was corrected first. The edges of the fracture were quite irregular and it appeared that there may have been some bone chips present at the fracture site. Reduction of this fracture was difficult, but it was felt that if a splint could be put on this leg and the segments of the fractured bone immobilized, healing would occur. To immobilize a leg of this size, ¾-inch plywood splints of the design illustrated (fig. 3) were sawed with a band saw and used to immobilize both the humerus and the tibia. With the fracture reduced and the leg wrapped with cotton padding and 3-inch gauze, the plywood splint was applied and firmly bandaged to the injured leg. A bandage encircling the dog's body and thorax was used to further immobilize the humerus. The entire splint was then wrapped with plaster of paris bandage.

When the pin was introduced into the medullary cavity of the tibia, it was found to be too small in diameter to be of much help. Consequently, it was removed and the tibia was splinted with ¾-inch plywood and the leg bandaged with cotton and gauze.

The dog was given oxytetracycline orally, and penicillin and streptomycin systemically, as supportive treatment. The owner then took him home since the clinic had no facilities for handling such a large dog. When he recovered from anesthesia, he lay quite still and made few attempts to get up. When offered food, the dog ate and seemed quite bright. He defecated and urinated normally. He did not object to being handled and the owner developed a hoist by which he could lift the dog and suspend him in a sling outdoors.

Approximately two weeks after the splints had been applied, the dog tried to remove the tibial splint. It was replaced, since the original splint had become soaked with urine. The humeral splint was also changed at this time. The same type of splinting was used except that no plaster of paris bandage was applied.

The splints were changed again in two weeks. At this time, the plywood of the tibial splint was soaked with urine, and was rotten. There were areas of pressure necrosis along the entire length of the hindleg. Ulceration was especially evident around the metatarsal and phalangeal region. The entire leg was painted with nitrofurazone (Furacin*) dressing and gauze bandages were applied. Over this dressed area, cotton padding and gauze bandage were wrapped and a new ¾-inch plywood splint was used. Oxytetracycline was given for five days to help prevent extensive infection of these necrotic areas.

*Furacin is made by Eaton Laboratories, Norwich, N.Y.

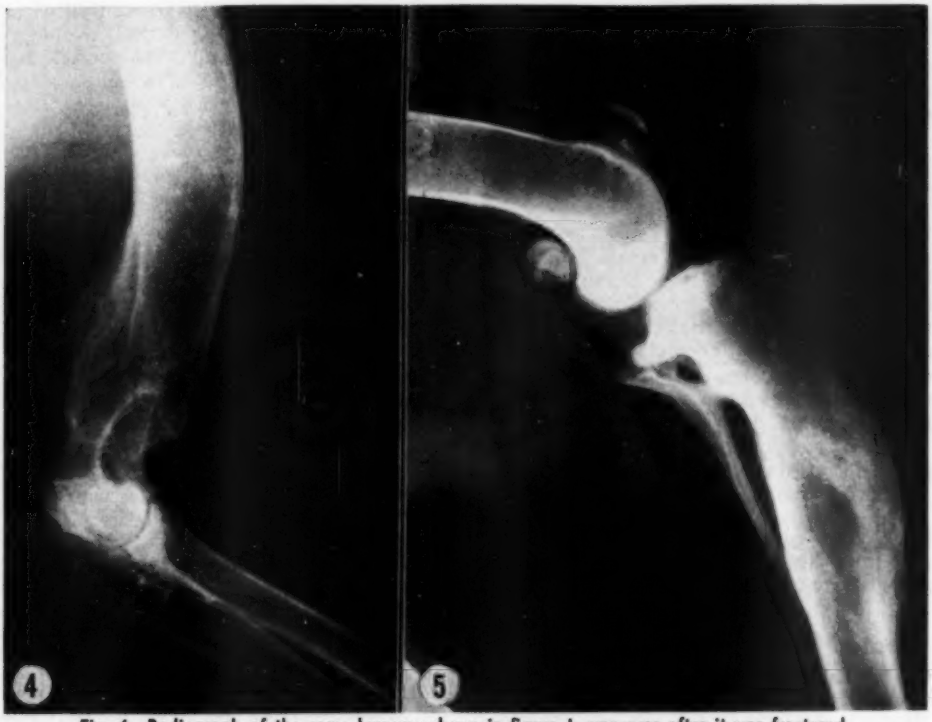


Fig. 4—Radiograph of the same humerus shown in figure 1, one year after it was fractured.
Fig. 5—Radiograph of the tibia shown in figure 2, one year after it was fractured.

The splints were applied initially on April 9. On May 20, maggots were crawling out of the splint on the humerus, and the tibial splint was again rotten due to urine. Both splints were removed, revealing extreme pressure necrosis. Both legs were dressed with ointment and bandaged with a loose gauze cotton bandage. The owner was instructed to keep the dog as quiet as possible and prevent him from moving except when necessary.

Results.—He improved rapidly and constantly. The areas of pressure necrosis healed rapidly and his appetite remained good. Over the 40-day period in which the splints had been on his legs, the dog lost approximately 40 lb. Within three to four weeks after the splints were removed, he could get up fairly easily, although he limped in both legs.

The dog, when observed one year after the removal of both splints, was in excellent condition and had a good coat and appetite. His tibia and humerus were shortened (fig. 4-6); however, he had compensated in his gait for both. He walked with a slight limp but had no difficulty in running.

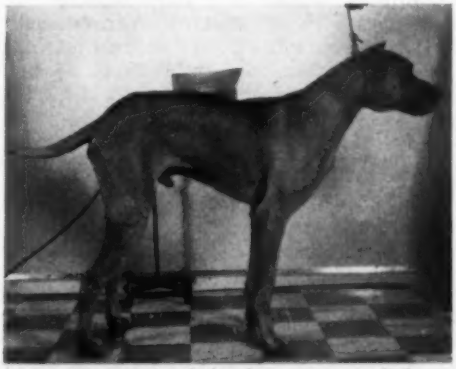


Fig. 6—Photograph of the dog one year after concurrent left humeral and right tibial fractures.

SUMMARY AND CONCLUSIONS

A mature Great Dane, weighing approximately 140 lb., suffered humeral and tibial fractures which were corrected by simple coaptation, the splints being in place for 40 days. He received excellent nursing care from the owner, an important factor in his recovery. When the splints were removed, extreme pressure necrosis was noticed on both fore- and hindlegs. This was unavoidable due to the fact that a Great Dane's leg has many bony protuberances and, in order to get immobilization, the splints had to be applied with fairly tight bandages. The areas of pressure necrosis were treated with nitrofurazone ointment (Furacin), with remarkably good results. It is fortunate that this dog had, like most Great Danes, a temperament and disposition that enabled him to withstand pain and discomfort without becoming vicious.

The animal was observed one year after injury, at which time he was in good health and walked and ran with little difficulty.

Effect of Oxytocin and Epinephrine on the Conception Rate of Cows

When 15 I.U. of oxytocin was injected intravenously within five minutes after the cows were mated, there was a significant increase in conception rate. In one group of normal cows, there was an increase from 56 to 84 per cent in actual calvings and in a second group a nonsignificant increase from 48 to 56 per cent. In two groups of hard-to-settle cows, the increases were 39 to 52 per cent and 21 to 58 per cent.

When 2 ml. of a 1:1,000 solution of epinephrine was injected intravenously within five minutes before natural mating, conceptions increased from 48 to 58 per cent (not significant).—*J. Dai. Sci., 41, (Oct., 1958): 1376.*

Repair of Ruptured Bladder in Foals

Rupture of the urinary bladder was encountered in 5 newborn male foals in four years. Presumably, it occurred when the foal was expelled with a full bladder.

The foals were anesthetized with pentobarbital sodium, held in a dorsal-lateral position, and a 4-inch incision made lateral to the prepuce, starting 1 inch in front of the pubis. The rupture was usually on the dorsolateral part of the bladder and less than 1 inch long. It was sutured with a double line of chromic catgut, avoiding penetration of the wall. The peritoneal cavity was then flushed with saline solution, and the operation was completed. One million units of penicillin was given intramuscularly for the next three days and the stitches were removed on the tenth day. A plastic 12-inch catheter was held in the urethra, by sutures through the edge of the prepuce, for 24 hours.—*J. L. du Plessis in J. South African V.M.A., 29, (Sept., 1958): 261.*

Transplantation of Mouse Embryos

Female mice were killed 60 hours after mating and 8- to 16-cell embryos were recovered from their oviducts. The embryos were cultured *in vitro* in a bovine plasma albumin solution for two days, then transplanted into the uteri of females which had been mated 60 hours previously. Blastocysts were recovered from the uteri of other females 84 hours after mating and were transplanted directly to the uteri of females mated 60 hours previously.

Two of these females were allowed to complete their gestation (19 days) and then were delivered by cesarotomy. Two of the young survived for four weeks when placed with a newly parturient foster mother (their third mother).—*Nature, 128, (Sept. 27, 1958): 877.*

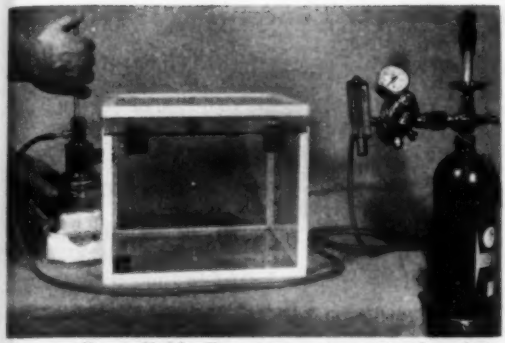
Maternal Care in Goats

In a test with 45 goats it was found, two months later, that females separated from their kids for an hour immediately after birth nursed their own young less and alien kids more than did those which had not been separated.—*Science, 128, (Nov. 28, 1958): 1342.*

Therapeutic Tattoo for "Collie Nose"

Tattooing effectively controls further development of the condition called "Collie nose" or chronic solar dermatitis, especially in the early stages of the disease.

The dog is treated under general anesthesia and a parenteral coagulant is administered prior to the procedure. An electrical tattooing instrument is used. A good quality tattoo ink is important.—*Lloyd C. Moss, D.V.M., Fort Collins, Colo., at the 1959 Colorado Veterinary Conference, Colorado State University.*



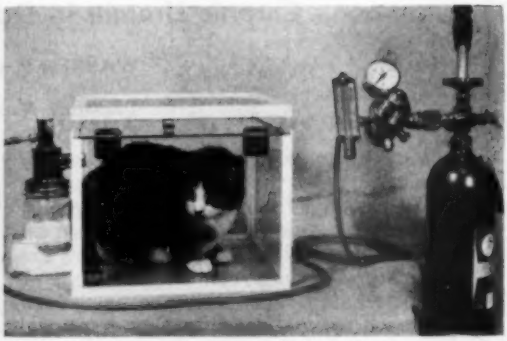


Fig. 1 (left)—The equipment consists of a plastic box, a nebulizer, and oxygen cylinder with measuring gauges. Inside the pint jar below the nebulizer is a 3-oz. bottle containing 20 cc. of ether, with a plastic suction tube extending from the bottom of the nebulizer into the bottle containing the ether.

Fig. 2 (right)—Cat is placed in the box and the lid closed. They seldom offer resistance, usually remaining quiet in a crouching position. Oxygen is allowed to flow for approximately two minutes at the rate of 3 to 4 liters per minute, or just until the ether is gone from the bottle. Salivation may occur but is seldom excessive.

Induction of Ether Anesthesia in Cats

S. W. STILES, V.M.D.

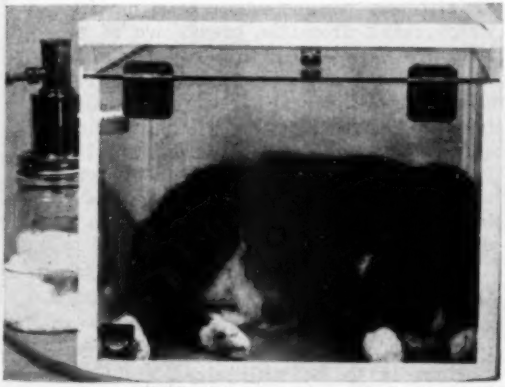
Falmouth Foreside, Maine

THE METHOD of ether induction shown in the accompanying figures has been used in our practice daily for eight years. Its advantages are: it requires no handling, no manual restraint, and no assistance for the operator; anesthetic emergencies are almost never encountered; and the procedure appears professional to the owner.

No disadvantages are known. The danger of explosions due to oxygen-ether mixture is very remote.

The plastic box was made by the Nicholson Manufacturing Co., Denver, Colo. The nebulizer was manufactured by the DeVilbiss Co., Somerset, Pa.

Dr. Stiles is a general practitioner in Falmouth Foreside, Maine.



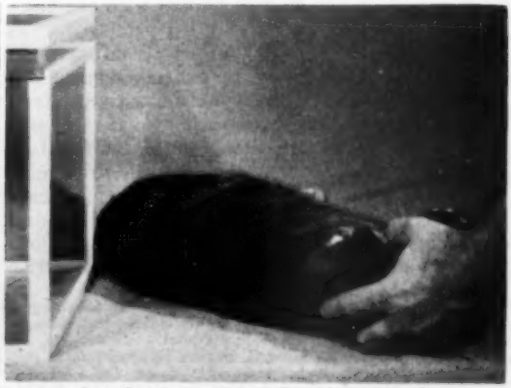


Fig. 3 (left)—Induction of anesthesia is complete approximately nine minutes after the start of oxygen flow.

Fig. 4 (right)—The cat is removed from the box and anesthesia is continued with an ether cone.

Clinical Data

Chronic Uremia in Dogs—Current Concepts

WARREN R. GUILD, M.D.

Boston, Massachusetts

MODERN MEDICINE has advanced so rapidly in recent decades that now most sick people can be materially benefited by one type of treatment or another. Textbooks, medical journals, and even lay publications are peppering the countryside with accounts of newer techniques and newer drugs which hold much promise. So intensive is medical research that some drugs are almost old-fashioned by the time they reach the market.

An enormous amount of this work stems not from observations made initially on man but carefully planned, rigorously controlled studies on animals. Heart surgery, poliomyelitis vaccine, kidney transplants, and the steroids are fresh examples. Man is much too unaware of the debt he owes his best friend, the dog.

Man, albeit unwittingly, is now contributing significantly to newer types of therapy for the dog. Until recently, it has been impossible to experimentally produce chronic nephritis in dogs. This, understandably, has been a major handicap in the clarification and delineation of proper and rational treatment.

Fortunately for the dog, chronically-diseased human kidneys behave much as chronically-diseased dog kidneys; thus the therapy of chronic renal disease in dogs is predicated largely on data derived from observations on human beings with chronic renal disease.

Nephritis in man differs from canine nephritis principally in cause. Glomerulonephritis and pyelonephritis account for the overwhelming majority of cases of chronic uremia in man, while interstitial nephritis, some of it leptospiral, predominates in dogs. This apparent etiological discrepancy, the involvement of the glomerulus and the tubule in chronic uremia of man, and the involvement of the interstitium in canine chronic uremia, does not nullify correlations of pathophysiology and therapy between the two species.

The kidneys of all animals have classically been described as a pair of discrete organs lying well-protected in the retroperitoneal fossae. From the viewpoint of gross anatomy, there can be no disagreement. Physiologically and microscopically, however, this is indeed a gross account. From the viewpoint of the physiologist and of the clinician, the idea of "two kidneys" should be discarded and replaced by one of "millions of nephrons," which are the individual functioning units of the "two kidneys." It is the number of functioning, healthy individual units that makes the difference between renal health and disease.

The nephron consists of a glomerulus and a tubule (fig. 1). If either is obliterated, the whole ceases to function. This is the basis on which human and canine uremia, although of different causes, can be compared. In both species, we are concerned about the number of nephrons which function or fail to function. It is not important which part of the nephron has failed, only that the entire nephron has been "knocked out of commission."

Kidneys have as a major responsibility the excretion of undesirable end-products of nitrogen metabolism. These particles, which result from the breakdown of protein, are harmless in the small quantities that normally exist in the body. However, should these chemical particles, conveniently called "osmols," accumulate due to inadequate excretion, a sort of auto-intoxication (uremia) develops. The number of osmols which must be excreted per day thus relates directly to the protein intake in the diet.

As the glomerular or tubular portions of the nephrons are gradually obliterated, each remaining nephron is thereby required to excrete more osmols if equilibrium is to be maintained and if an accumulation of these noxious particles resulting in uremia is to be avoided. This extra load per nephron can increase to a

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This study was supported in part by grants from the Medical Research and Development Board, Office of the Surgeon General, Department of the Army; U.S. Public Health Service; and the American Heart Association.

Presented before the Section on Small Animals, Ninety-Fifth Annual Meeting, American Veterinary Medical Association, Philadelphia, Pa., Aug. 18-21, 1958.

prodigious capacity. Quantitatively, for example, only about 25 per cent of the nephrons are necessary to rid the body of the minimal obligated daily load of osmols (graph 1). Stated otherwise, 75 per cent of kidney function may be lost through disease before the added work for the remaining nephrons becomes excessive.

It is no wonder that most human beings and dogs with chronic renal disease are not seen professionally until over 75 per cent of their kidneys have been destroyed and the illness is far advanced. Similar reserve function, however, is noted in the other vital organs, namely the heart, brain, liver, and lungs, where massive destruction is still compatible with relatively normal function of the organism.

When blood urea nitrogen or nonprotein nitrogen is elevated in a dog with chronic nephritis, the clear assumption is that they are not being excreted fast enough, that over 75 per cent of the total nephron population is functionless, and that the remaining healthy nephrons are struggling valiantly, although unsuccessfully, to keep up with the pace.

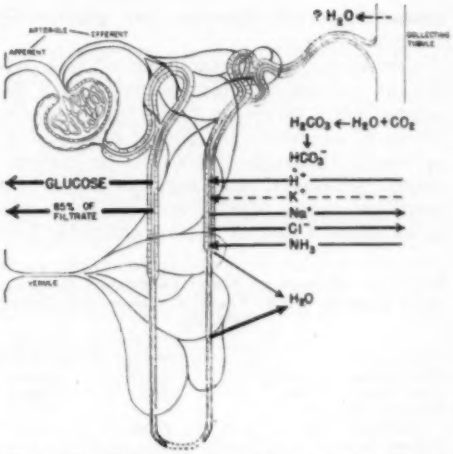
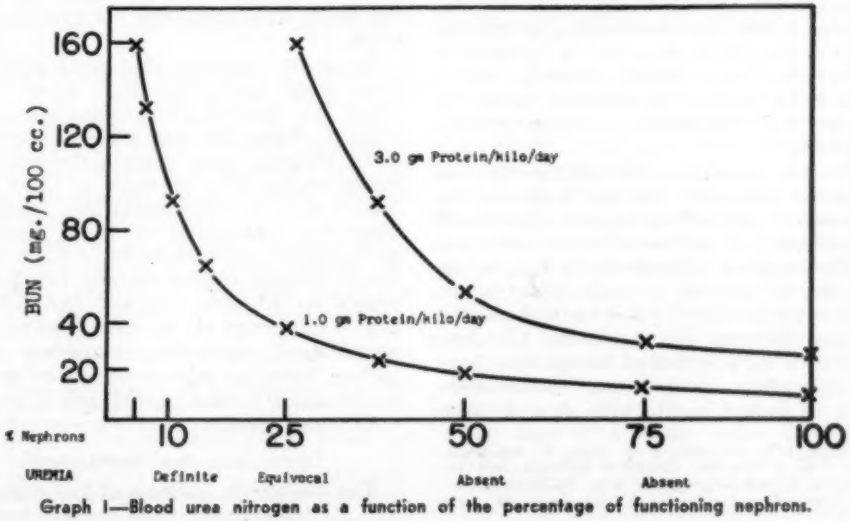


Fig. 1—Functioning normal nephron with glomerulus and tubule; reabsorptive and secretory actions of the proximal and distal tubule are shown.

TREATMENT

Since the dog has uremia because of inadequate excretion of the minimal obligated daily load of osmols, efforts should be aimed at correcting both parameters. The first attempt should be to increase renal function (*i.e.*, the glomerular filtration rate); the second, to decrease the load of deleterious osmols which must be excreted per day.

Increased renal function or an increased glomerular filtration rate results in a greater number of osmols being delivered down the kidneys for excretion in the urine. It is an empiric observation that a decreased intake of sodium by dogs or man with chronic renal disease results in a de-



Graph 1—Blood urea nitrogen as a function of the percentage of functioning nephrons.

crease in renal function (or glomerular filtration rate).[1]

Conversely, the replacement of this deficit of sodium (another osmol, but a desirable one) increases renal function. Addition of sodium to the diet of man or dogs is relatively simple. This is done inexpensively, palatably, and accurately by beef bouillion cubes. Each bouillion cube contains about 3 Gm. of sodium chloride. Adding 1 or 2 bouillion cubes per day to the feed of a dog adds 3 or 6 Gm. to the daily salt intake. In the salt-depleted individual, significant increases in glomerular filtration rate may occur. If minimal cardiac failure due to the added salt does not supervene (which is walking a therapeutic tightrope with little or no cardiac reserve on one side and little or no renal reserve on the other), chemical and clinical improvement usually follow.

TABLE I—Influence of Water Loading on Daily Osmolar Excretion in a 57-Year-Old Woman with Chronic Nephritis

	Control	Water loading
Fluid intake (cc./day)	3,800.0	8,000.0
Fluid output (cc./day)	4,050.0	7,600.0
Osmolar excretion (milliosmols/day)	790.0	833.0
Sodium excretion (milliequivalents/day)	176.0	175.5
Blood urea nitrogen (mg./100 cc.)	32.0	30.0
Body weight (kg.)	68.2	68.2

The second aim of therapy is to decrease the total number of osmols which must be excreted per day. This can only be done, as shown before, by decreasing the protein intake, since it is converted to harmful osmols when metabolized. This is accomplished by placing the dog on a ration low in protein. Such rations are commercially available.

Caution must be observed in this approach. Although protein adds to the amount of noxious substances which must be excreted, it also provides calories which protect against malnutrition. Also, a diet too low in protein is unpalatable to man and animals alike. The practical solution to this dilemma is to give the dog about half of a daily ration of low-protein mash. To this add a source rich in carbohydrate, such as cooked potato with skin, to bring his total daily bulk and nutriment back to normal. Blend in 1 to 2 tablespoonfuls of pork fat (or other odoriferous animal fat) to make the ration palatable and calorically adequate.

Fluid requirements have not been mentioned. At both physiological and clinical levels, this is not important. First, the old adage of "force fluids for kidney patients" has no experimental basis. In human beings with chronic uremia, the intake of fluid can be increased gradually from a control of about 3,000 cc. per day up to 8,000 cc. per day, with a corresponding increase in urinary output (table 1). However, the total daily osmolar excretion does not significantly change. The explanation is that although more urine is excreted, the concentration of osmols per liter greatly decreases.

Similarly, dogs with chronic renal disease have a limited ability to concentrate the urine but can, over a short period, dilute their urine with relative ease. If they are not dehydrated, forcing fluids is of no therapeutic benefit.

Second, while the kidneys of dogs with chronic uremia are diseased, the thirst mechanism is intact, and dehydration does not often occur; the dog responds to thirst by drinking water. Moreover, the added salt in the form of bouillion cubes increases the desire for liquids, just as do salty ham and potato chips eaten by man.

And third, short of Pavlovian behavioral dictatorship, a convenient means for forcing fluids in animals has not yet been devised.

One must remember that many renal and extra-renal conditions may deleteriously affect the function of chronically-diseased kidneys. When the dog with well-compensated chronic renal disease suddenly becomes uremic, one or more of these conditions may be responsible and should be suspected. Correction in these instances often results in reversibility of the uremia. These factors (which usually can be assessed on history, physical examination, and a minimum of laboratory work) are dehydration, starvation, congestive heart failure, infection, alkalosis, and obstruction of the urinary tract as with calculi or prostatic hypertrophy.

DISCUSSION AND CONCLUSION

The therapy in animals of any incurable but not immediately fatal disease must be

[1]Nickel, J. F., Lowrance, P. B., Leifer, E., and Bradley, S. E.: Renal Function, Electrolyte Excretion, and Body Fluids in Patients with Chronic Renal Insufficiency Before and After Sodium Deprivation. J. Clin. Invest., 32, (1953): 68-79.

eminently physiological, fairly inexpensive, and moderately easy for the owner. Also, the results, statistically, should offer a reasonably favorable prognosis. Herein does the veterinarian exercise a greater degree of latitude than does his counterpart in human disease.

Barring unforeseen accidents, chronic uremia in man and dogs portends a shortened existence. With attempts at increasing the excretion of undesirable osmols and decreasing the total daily osmolar load, conservative medical management may extend the life expectancy of both man and animals and maintain them completely or relatively symptom-free.

SUMMARY

The nephron, the functioning unit of the kidney, has remarkable capacity to adjust to chronic uremia, but when dogs fail to excrete deleterious osmols, attempts should be made to increase renal function and to decrease the load of deleterious osmols. The first can be attempted by increasing sodium intake by means of bouillion cubes added to feed. The second is attempted through decreased protein intake, either by commercial dog food prepared for this purpose or by home preparations such as meal, potato, and pork fat.

Fluid requirements have no importance in the management of dogs with chronic uremia.

The Effect of Hygromycin B on the Migrating Larvae of *Ascaris Suum*

GEORGE W. KELLEY, Jr., Ph.D., and LELAND S. OLSEN, Ph.D.

Lincoln, Nebraska

IT IS VITALLY important to prevent the migration of larval *Ascaris suum* in pigs because severe damage is produced during this phase of the infection. As the larvae pass through the liver, they destroy cells, resulting in scarring, fibrosis, and cirrhosis. The capillaries and alveoli of the lungs are ruptured by the larvae, producing hemorrhages, consolidation, and pneumonia.

In addition to these physical effects, it was found that migrating larvae of *A. suum* enhanced the effects of virus pneumonia of pigs (VPP) tenfold.[9] An anthelmintic preventing this migratory phase of ascariasis would result in more efficient pork production.

In 1956, it was reported that piperazine-HCl killed larvae of *A. suum* while they migrated in mice.[1] It was found that 6,000 units of hygromycin B* per pound of feed did not prevent the migratory phase of ascariasis in pigs.[7]

The purpose of this study was to determine the effect of various doses of hygromycin B on the migration of larval *A. suum* and to determine whether these larvae would reach maturity within the intestinal tract after having been subjected to hygromycin B during the migratory phase.

The study was done in two parts. The first part was planned to determine the immediate effects of hygromycin B on migrating larvae. This part consisted of three trials in which varying dosages of the drug were used. The second part was devised to determine whether larvae which had been subjected to hygromycin B during their migratory phase would later become established within the intestine of their host.

The pigs used in these studies were 1 day old and had been delivered by hysterectomy and maintained in close isolation according to the method previously described.[10]

The eggs of *A. suum*, which came from worms collected at an abattoir, were cultured at 27 C. in granular animal charcoal for at least two months. Before they were

From the Department of Animal Pathology, University of Nebraska, Lincoln.

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*Fermentation product of Streptomyces hygroscopicus and provided for these experiments by Eli Lilly Co., Indianapolis, Ind.

TABLE 1—Number and Size of Migrating Larvae of Ascaris Suum in the Liver and Lungs of Pigs Treated with Hygromycin B

Hygromycin B (units)	Age of larvae*	No. of larvae in liver	Av. size in liver (mm.)	No. of larvae in lungs	Av. size in lungs (mm.)
Trial 1					
3,550 i.m.	5	12,527	0.395**	4,984	0.474**
3,550 i.m.	5	4,359	0.304**	6,512	0.299**
3,550 orally	5	7,620	0.723	12,312	0.842
3,550 orally	5	7,202	0.600†	6,030	0.776**
Control	5	5,508	0.712	6,151	0.880
Trial 2					
5,000 orally	6	3,484	0.598	5,655	0.640**
10,000 orally	6	3,780	0.360	2,698	0.650**
20,000 orally	6	9,418	0.547	7,269	0.640**
Control	6	1,095	0.461	11,519	1.040
Trial 3					
40,000 orally	7	2,727	0.340	1,815	1.210
80,000 orally	7	948	0.310	1,485	0.540**
Control	7	0	.....	14,442	1.360

*Days after the eggs were fed; **these larvae were significantly smaller than controls ($P<.01$); †$P<.05$ but $>.01$ ("Student" t test).

given to pigs, their infectiveness was checked in mice.[5] Each pig was given 50,000 eggs by *gavage*.

Two purified preparations of hygromycin B were used. These contained 840 and 920 units (antibiotic) of activity per milligram, respectively. Proper volumes of concentrated aqueous solutions were added to the liquid feed to produce the desired dosage, or the solutions were injected intramuscularly. The stock solutions were kept at 4 C. between feedings and new stock solutions were prepared before each trial.

Trial 1.—The trials were started in March and April, 1957. Two infected pigs were given 1,775 units of hygromycin B orally, twice daily; 2 were given 1,775 units intramuscularly, twice daily, and a fifth pig remained untreated. Administration of hygromycin B was begun on the day that Ascaris eggs were fed and continued five days. All pigs were necropsied five days postinoculation and larvae were counted by the method described.[5] Twenty worms selected at random from each population were measured to determine the effect of the drug on larval growth.

TABLE 2—Number and Size of Larvae Established in the Intestine of Pigs Treated with Hygromycin B for the First Five Days Postinoculation

Hygromycin B (units)	Age of larvae*	No. in intestine	Size (mm.)
40,000 orally	30 days	703	33.3
40,000 orally	30 days	418	36.2
Control	30 days	966	28.2
Control	30 days	527	33.0
Control	30 days	539	23.3

*One pig receiving 40,000 units daily was examined on postinoculation day ten and had 4,427 larvae in the lungs, 4 in the trachea, and 31 in the intestine.

Trial 2.—Three infected pigs were given 5,000, 10,000, and 20,000 units of hygromycin B, respectively, each day for seven days. The medicament was given orally with the ration, beginning one day before the ascarid eggs were fed. A fourth pig was untreated. Larvae were recovered six days following infection, as described previously.

Trial 3.—Hygromycin B was fed for two and one half days before the ascarid eggs were given and for seven days afterward. Two pigs were given, orally, 40,000 and 80,000 units, respectively, each day. A third pig served as an untreated control. The pigs were examined at necropsy seven days postinoculation.

In phase two, 40,000 units of hygromycin B was given orally to 3 pigs daily during the first five days after inoculation. After this treatment, the pigs were fed only rolled oats beginning five days after inoculation, to enable the ascarides to become established in the intestine.[6] Three untreated pigs served as controls and were placed on the rolled oats diet simultaneously with the principals. One treated pig was necropsied ten days postinoculation. The remaining 5 pigs were examined at necropsy 30 days after the eggs were fed.

RESULTS

The results obtained in the three trials of the first part demonstrated that hygromycin B did not prevent the larval migration of *A. suum* (table 1). It did, however, retard the growth of the larvae during the migratory phase. Growth retardation of the larvae was most pronounced in the pigs given 1,775 units intramuscularly, twice daily. Given in this manner, however, the medicament proved toxic, killing the pigs in five days.

In trial three, the 40,000-unit dose failed to retard larval growth in the lung although doses of 5,000, 10,000, and 20,000 units had caused retarded growth in trial 2. However, larval growth was significantly retarded when 80,000 units were fed daily in trial 3.

Larvae migrating in pigs which were fed 40,000 units of hygromycin B daily

later became established in the intestines* (table 2). Size variation was extreme in the 30-day-old worms and thus no differences could be demonstrated between the average size of one population and another.

DISCUSSION

The anthelmintic action of hygromycin B requires about three weeks to manifest itself.[4,8] It is thus probable that contact with the anthelmintic was too short to kill the migrating larvae. Although larvae are able to establish themselves within the intestine following five days' exposure to hygromycin B, in all likelihood continued medication would have resulted in their death. It was demonstrated[3] that no Ascaris organisms developed in pigs given 6,000 units of hygromycin B per pound of feed for 76 days; and it was indicated by others[2] that hygromycin B affected *A. suum*.

Hygromycin B does not prevent larval migration; thus, systemic damage inflicted at this stage of ascariasis cannot be averted with this medicament.

SUMMARY

Hygromycin B given to pigs at levels ranging from 3,550 to 80,000 units daily until five to seven days postinoculation retarded larval growth of *Ascaris suum* but did not prevent migration. Doses of 3,550 units given intramuscularly killed pigs in five days and retarded growth of larvae, but did not prevent migration.

Ascaris suum organisms which had been exposed to hygromycin B during the first five days postinoculation later became established within the intestine.

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[10]Young, G. A., Underdahl, N. R., and Hinz, R. W.: Procurement of Baby Pigs by Hysterectomy. Am. J. Vet. Res., *16*, (1955): 123-131.

*In a preliminary experiment, 80,000 units daily was given for five days to each of 4 infected pigs feeding on oatmeal. All 4 of these pigs died before postinoculation day 12 but 4 untreated controls survived.

Pityriasis Rosea in Suckling Pigs

This ringworm-like skin disease of pigs, the cause of which has not yet been found, occurred during the first weeks of life, in Germany, then disappeared spontaneously after several weeks. Observations on inbred litters in the herd indicated that there may be a heredity factor. The disease did not appear in 90 litters from unrelated sows, all of which were in close contact with the affected pigs.—*F. Heuner, in Die Vet.-med., 11, (Nov. 4, 1958): 856.*

Bovine Tuberculosis in 1957

Of the nearly 9,000,000 cattle tuberculin-tested in the United States in 1957, 0.156 per cent were considered reactors, a slight increase for the third successive year. Of the 14,054 reactors slaughtered, 28.9 per cent showed gross lesions and 2.3 per cent were condemned. In one Texas incident, the origin of the animal was traced and, of the 139 cattle in the herd, 40 reacted to the tuberculin test.—*Donald Miller in Pub. Health Rep., 73, (Dec., 1958): 1137.*

Treatment of Induced Tuberculosis

When tuberculous guinea pigs were treated with the sodium salt of para-aminosalicylic acid (NaPas), starting 21 days after inoculation and continuing for 60 to 70 days, a single 200-mg. daily dose was markedly effective whether given subcutaneously or orally.—*A. G. Karslon and D. T. Carr in Am. Rev. Tuberc., 78, (Nov., 1958): 753.*

Methocarbamol Therapy In Equine Tetanus

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To evaluate a drug on the basis of 1 case is not sound, but the classic results achieved justify reporting this case.

Methocarbamol (Robaxin*), 3-(o-methoxyphenoxy)-hydroxypropyl carbamate, acts primarily within the spinal cord and exerts a prolonged blocking activity on multisynaptic reflexes without significantly affecting monosynaptic reflexes. It does not act directly on the contractile mechanism of striated muscle, the motor end plate, or the nerve fiber. It is a long-acting drug and, if given every 12 hours, there may be some cumulative action.

CASE REPORT

A 1,100-lb. Morgan gelding, 7 years old, was stiff and unable to eat for a day or more. There was marked sweating and a temperature of 102.5 F.; also general spasms and rigidity of the muscles of the neck, back, loins, and tail. The neck was in orthotonus, the jaws were partially "locked," and there was profuse salivation and a general "sawbuck" attitude. On raising the head, the membrana nictitans extended across the eye and definite excitation occurred on hearing loud sounds. The diagnosis was tetanus.

Treatment was started with procaine penicillin G and chlorpromazine twice daily. The horse was put into a dark stall and offered wet mashes and chopped hay and grass but was given no tetanus antitoxin. After 48 hours, the condition deteriorated to a point where the jaws were completely locked and the horse was unable to move without falling—apparently a fatal case.

On the fourth day of tetanus, treatment with methocarbamol was initiated, giving 5 Gm. in a 50-ml. solution intravenously every 12 hours. This was followed by a slight loss of rigidity, greater steadiness on his feet, a decrease in salivation, and ability to sip small quantities of water.

On the fifth day, the jaws once more were locked and the horse was unsteady and weakened. The first 5-Gm. dose was again followed by a lessening of rigidity, but with no inclination to eat or drink. However, when 20 ml. (2 Gm.) of the second 50-ml. dose had been injected, the horse reared, broke away from the operator, and with jaws widely-opened rushed into the corner of his stall and began to eat vigorously.

Starting the sixth day, the dose was reduced to one 5-Gm. injection daily, which seemed to maintain the degree of relaxation necessary so the horse could eat. On the tenth day, treatment was discontinued.

Fourteen days after the onset of tetanus, the horse was put in a pasture. His rigidity gradually lessened and his stability increased.

Eight weeks after the onset of tetanus, the horse was worked regularly under saddle, and was apparently fully recovered.

DISCUSSION

The 5-Gm. dose every 12 hours was computed on the adult human dose which is 500 to 600 mg. three to four times daily. The response of this horse indicates that there may be some cumulative effect, resulting in the sudden marked improvement on the fifth day of illness. Half the dose maintained the improvement after the jaws relaxed and the horse was able to eat.

Dr. Smith is a general practitioner in Hanover, N.J.

*Robaxin is produced by A. H. Robins Co., Richmond, Va.

Antibiotics and Urinary Calculi

In a group of 276 experimental wether lambs, 26 died from the effects of urinary calculi. There were fewer deaths in those fed urea than cottonseed meal as a source of nitrogen, but the fewest deaths were in the group fed chlortetracycline at the rate of 10 mg./lb. of feed. When the remaining lambs were slaughtered, the number of calculi in the kidneys indicated similar results.—*Proc. Soc. Exptl. Biol. and Med., 97, (1958): 860 (abstr. in Vet. Bull., Nov., 1958: Item 3663.)*

Trichinosis in Iowa Dogs and Cats

Trichinella spiralis larvae were recovered from 10 per cent of 521 dogs and 6 per cent of 50 cats examined during four years ending in 1957, in Iowa. Infections were generally light, but were definitely increased in the older groups of animals.—*W. J. Zimmerman and L. H. Schwarte, J. Parasitol, 44, (Oct., 1958): 520.*

The Propulsive Administration of Nicotine as a New Approach for Capturing and Restraining Cattle

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CAPTURING AND restraining wild or vicious cattle often presents a major problem, and it is not uncommon for such animals to evade capture for months. The handling of dangerous bulls or other animals sometimes incites a serious threat to property and to human lives. Police departments may be called upon to destroy a valuable escaped animal, and it is frequently difficult to maneuver the animal into a position where the use of firearms would be safe. For selected types of therapy or in certain disease-control programs, it is impossible to estimate the man-hours lost during the restraining of unmanageable animals or while waiting for the capture of feral animals.

Because there is a definite need for improved methods in handling certain animals, a relatively new approach to this problem is reported.

HISTORY OF DEVELOPMENT

The first account of the remote induction of a drug for capturing an animal was in 1933.[1] Within the past decade, a number of impovements in this procedure have been described.[6,9,10,11] A more advanced but still crude instrument for delivering nicotine salicylate from a distance was used to capture 17 White-Tailed Deer (*Odocoileus virginianus*) without a fatality.[2] The drug was then used experimentally on semiwild goats (*Capra hircus*),[5] and later 136 wild deer (*O. virginianus*) were captured with nicotine salicylate-laden-darts.[3]

From this experimental work, it was observed that the administration of nicotine in solution is more effective than the dart method which was designed for delivering a pastelike material. Further experimentation with hand syringes and darts in a number of mammalian species demonstrated that a syringe-type delivery was essential for animals over 200 lb. in body weight.[8] Also, the syringe caused much less trauma than that inflicted by the dart.

An automatic projectile-type syringe was designed for this purpose and efficient means for propelling the missile were devised.[4] The immobilizing properties of the various nicotine salts were compared with those of the alkaloid from tobacco (*Nicotiana tabacum*). In experimental goats, the alkaloid and its salts possessed similar pharmacological properties; however, since the alkaloid was approximately twice as efficient for immobilization, it was selected for experimentation with cattle.

MATERIALS AND METHODS

The following alterations have been made on the original rifle and automatic projectile-type syringe.

Mechanical.—(1) A replaceable, stainless steel, screw-type needle was designed in lieu of the original, solid-piece syringe barrel. Needles (13 gauge) of different lengths (¾ to 2 inches) were used.

2) A stainless steel collar was pressed to a position of one third the length of the needle shaft as measured from the anterior tip or point of the needle. The exterior diameter of the needle measured 2.3 mm. and the maximum diameter of the two-way beveled collar was 3.8 mm.

3) The syringe needle-base was designed to accommodate a neoprene "0-ring," which adequately secured gas pressure within the combustion chamber.

4) To facilitate better performance and accuracy, the barrel of the pneumatic delivery instrument was rifled.

Combustion Chemical.—To acquire the delivery potentials essential for the syringe, equivalent weights of tartaric acid and potassium bicarbonate were selected as basic ingredients of the effervescent mixture. These chemicals were pressed into tablet form, and on contact with water, a

A contribution from the University of Georgia and the Georgia Game and Fish Commission involving the University's schools of Veterinary Medicine, Forestry (Wildlife Management), Pharmacy, and the College of Agriculture Experiment Stations; journal paper No. 77 of the College Experiment Station.

A discussion of the practical application of this procedure was first presented before the Twentieth Annual Conference for Veterinarians, North Carolina State College, Raleigh (Jan. 28-31, 1958), and later given at the Twelfth Annual Meeting of the Animal Disease Research Workers in the Southern States, Oklahoma State University, Stillwater (March 6-7, 1958).

The authors are grateful for the cooperation of Dr. Lawrence C. Curtis, Department of Horticulture, University of Georgia, Athens, in the development of this procedure for cattle.

The instruments and drugs used for this study were furnished by the Palmer Chemical and Equipment Co., Inc., Atlanta, Ga.

rapid release of carbon dioxide occurred [$C_2H_4O_2(COOH)_2 + 2KHCO_3 \xrightarrow{H_2O} C_2H_4O_2(COOK)_2 + 2CO_2 + 2H_2O$]. The combustion tablets were kept in air tight containers with a small quantity of calcium chloride to facilitate drying.

Immobilizing Drug.—The alkaloid of nicotine was used in various concentrations of distilled water with 1 per cent of benzyl alcohol as a preservative. The stock solutions were kept in brown bottles to prevent deterioration.

For propelling and injecting the drug, a second model of a practical "flying-type-syringe" (fig. 1) and a 50 caliber CO_2-powered rifle constructed for this specific purpose were used.[4] Syringes were effectively propelled distances of 5 to 50 yards.

A total of 134 cattle of various breeds (predominantly Hereford), dispositions, ages, sexes, and sizes was used. The drug was given intramuscularly, usually in the heavy muscles of the hindquarters (fig. 2). The animals were observed from the time of drug administration until the outcome was determined.

RESULTS

Data compiled from 134 tests are presented (table 1). In some ways, the response of cattle to nicotine differed from

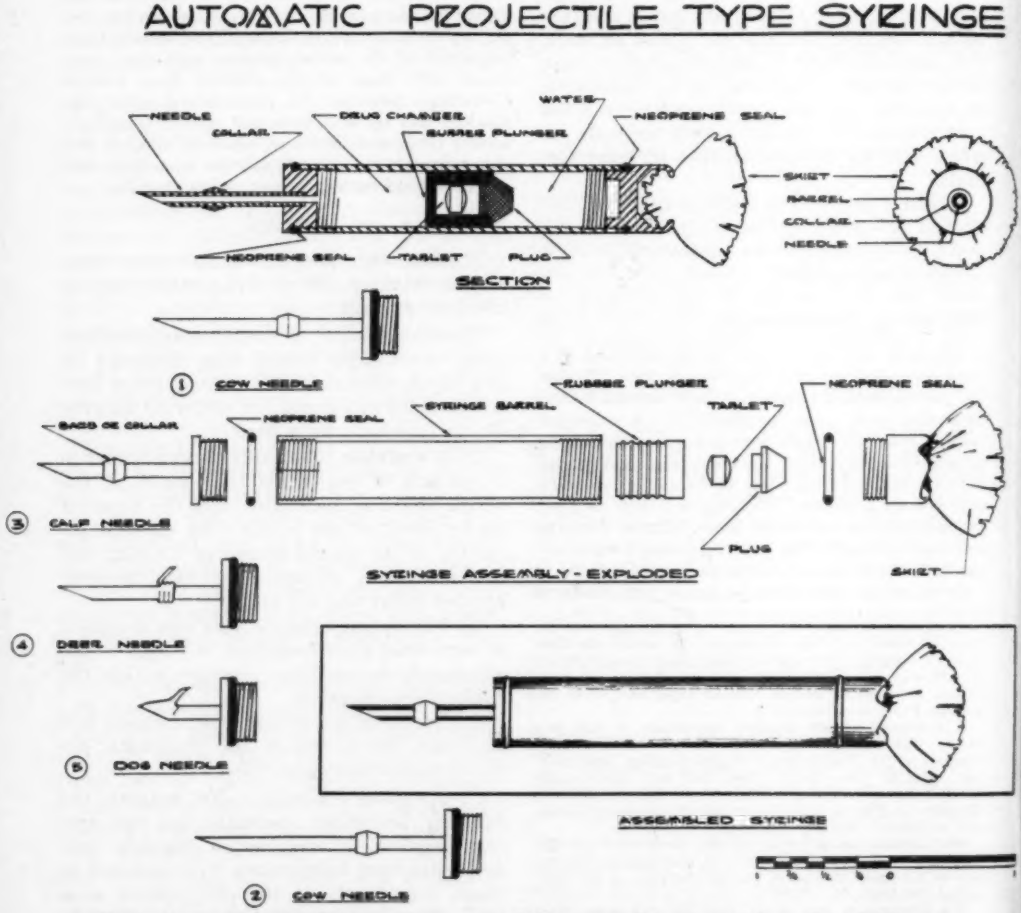

Fig 1—Automatic projectile-type syringe—view of the new model syringe with needles of different lengths and designs for various sizes and species of animals.

those observed in deer and goats.[3,9] The onset of drug action was usually between two to six minutes and the first visible sign was an increase in both the rate and depth of respiration. This was followed by profuse salivation and a pronounced tendency to urinate and defecate. Muscular tremors ensued, followed by swaying in the hindquarters, loss of coordination, stumbling, and falling. The reflex function of the nictitating membrane soon was impaired so that it partially covered the cornea. Regurgitation did not occur in cattle. The degree and period of motor paralysis were controlled by the dose of nicotine.

All animals which recovered were normal in 48 hours. Most were eating within 12 hours; however, some showed signs of muscular soreness for two days. Within a period of three months, 1 475-lb. steer was immobilized seven times without evidence of ill effects from the drug. Six additional animals were immobilized more than once without showing adverse effects during eight months of observation.

DISCUSSION

The cattle comprising groups 1 and 2 (table 1) were relatively docile animals, which probably accounted for the high effectiveness of nicotine at 0.50 to 0.75 mg. per pound of body weight. Most animals in groups 3 and 4 were difficult to capture. The dose of 1.0 mg./lb. was slightly low for optimum results, and should be used only where cutting-horses or corralling facilities are available. Where it was essential to completely "stop" an animal, 1.5 mg./lb. was preferred. Although 2.0 mg./lb. produced desirable results, this dose was necessary only for extremely wild or vicious cattle (fig. 3). This drug level was as effective as 3.0 mg./lb. and higher dosages were not suitable for practical application.

There was no appreciable difference in the time required for the immobilization of cattle at the various drug levels. The exact position of the injection site appeared to be the time-governing factor, and the hemorrhage created probably was responsible for these variations in the rate of absorption. Suspected injections into subcutaneous or fatty tissues markedly reduced the efficacy of the drug. Good "intramuscular hits" immobilized cattle in one to six minutes.

The recovery time for animals immobilized with nicotine seemed to be directly proportional to the quantity of the drug injected. Although an adequate safety factor

TABLE I—Data Showing the Immobilizing Properties of Nicotine and the Potentialities of This Procedure as an Adjunct to the Present Methods for Capturing Wild or Vicious Cattle

Group No.	No. animals per group	Av. wt. per group (lb.)	Drug (mg./lb. body wt.)	No. animals unaffected	No. animals immobilized	No. animals unable to stand	Av. time for immobilization (min.)	Av. recovery time (min.)	No. animals died	Mortality (%)	Desirable results (%)	Comments
1	9	522	0.50	1	8	3	10	81	0	0.0	88.8	Dosage light for most cattle.
2	5	912	0.75	0	5	2	5	36	1	20.0	80.0	Marked tranquility; mortality assumed due to excessive stimulation with electric prod.
3	45	731	1.00	6	39	8	7	59	0	0.0	86.6	Effective dose for average subject; insufficient for some animals.
4	43	696	1.50	1	42	18	8	75	1	2.3	95.3	Ideal dose for most subjects; death presumably associated with frontal sinus myiasis.
5	17	421	2.00	0	17	14	4	110	0	0.0	100.0	Should immobilize any cattle; time for recovery often inconvenient.
6	11	690	3.00	0	11	6	10	234	3	27.2	72.7	Dosage unnecessary under most circumstances; approaches $l.d._{50}$ for cattle.
7	1	400	3.50	0	1	1	6	0	1	100.0	0.0	Approximate $l.d._{50}$ for cattle.
8	1	650	3.65	0	1	1	6	0	1	100.0	0.0	Approximate $l.d._{50}$ for cattle.
9	1	400	5.00	0	1	1	6	0	1	100.0	0.0	Dosage for rapid kill only.
10	1	430	6.00	0	1	1	4	0	1	100.0	0.0	Dosage for rapid kill only.

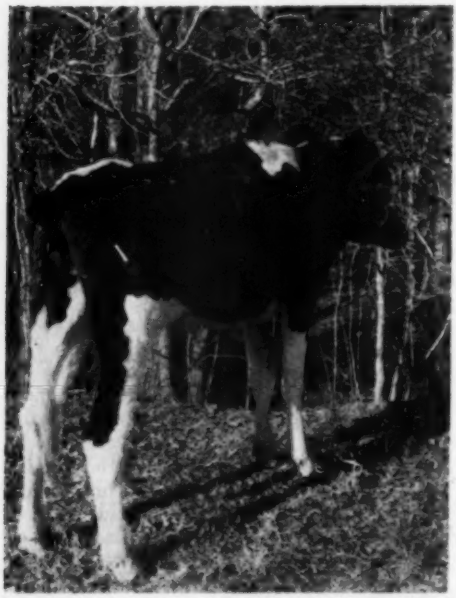

Fig. 2—The position of a syringe at the beginning of an intramuscular injection.

existed at 2.0 mg. of nicotine/lb. of body weight, the time required for recovery was from one to five hours. This seriously inconvenienced most field operations. Larger doses were hazardous and impractical.

Considerable experience is required for the successful field application of this method. A single error in assemblage of the projectile syringe can render the instrument useless. The carbon dioxide rifle is efficient but has its limitations and does not possess the durability of the regular firearm. The drug used in this study was remarkably effective and rapid in its immobilizing action on cattle. Although this technique has a sporting potential, it should be used only where all conventional methods for subjugating or capturing cattle have failed.

Fig. 3—A vicious cow five minutes after the injection of a relatively heavy dose of nicotine (2.0 mg./lb. body wt). This animal regained her footing three hours following drug administration.

The lethal qualities of nicotine for man should be emphasized, as it is unlikely that a human being could survive any of the syringe doses used in these experiments.[7]

SUMMARY

In 134 trials with the remote delivery of nicotine for immobilizing cattle, the data obtained indicate that the intramuscular administration of nicotine (1.5 mg./lb. of body weight) might prove to be a valuable adjunct to present methods in handling livestock.

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Cow Tranquilizer Is Impractical.—A hydroxyzine tranquilizer, tested at Michigan State University, seemed to induce a slight increase in milk production at one level, but not enough to be practical.—*Prairie Farmer, (Feb. 7, 1954): 54.*

Comparative Growth Response of "Disease-Free" and Diseased Swine to Iron Administration

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RECENT WORK[1,6] indicated that newborn pigs injected with iron-dextran averaged 1 to 6 lb. increase in body weight at 56-day weaning as compared to pigs given iron pills, iron-copper paste, or those nursing dams whose udders were painted with an iron salt solution daily. Iron-dextran was apparently more effective than previous methods of iron treatment. In this work, there was no indication of the existing disease level in the experimental herds.

A current study indicated that iron-dextran was an effective iron treatment in an experimental herd where atrophic rhinitis (AR) and virus pig pneumonia (VPP) were present. By contrast, no response was obtained when iron-dextran injections were used in a "disease-free" herd. Since AR and VPP are widespread in U.S. swine populations, additional and abnormal iron requirements attributable to these diseases may be common. The purpose of this paper is to report data indicating a reduced demand for supplemental iron in "disease-free" pigs.

MATERIALS AND METHODS

Experiments 1 and 2: "Disease-Free" Pigs.—Nine litters consisting of 114 "disease-free" baby pigs* were treated with various dosages of different forms of iron (in all experiments the iron-dextran was injected intramuscularly). In experiment 1, five litters were used, with each litter being divided into three treatment groups: (1) 2 ml. of iron-dextran injected within 24 hours of birth; (2) 4 ml. of iron-dextran—2 ml. within 24 hours of birth and 2 ml. 14 days later; (3) no supplemental iron.

In experiment 2, four litters were used, each litter being divided into three treatment groups: (1) 2 ml. of iron-dextran injected within 24 hours of birth; (2) 4 ml. of iron-dextran—2 ml. within 24 hours of birth and 2 ml. 14 days later; (3) 4 ml. of reduced iron—2 ml. given orally within 24 hours of birth and 2 ml. 14 days later. The reduced iron (0.1 Gm.) was given with a 10-cc. syringe and a small rubber tube.

The 114 pigs were weighed within 24 hours after birth, divided by sex, and randomly assigned to experimental treatments on a within-litter basis. The birth weight of all treatment groups was essentially the same, ranging from 2.6 to 2.8 lb. All litters were raised on concrete and had access to creep feed at 7 days of age. Losses from all causes from birth to 56 days in this herd were 8.2 per cent.

The "disease-free" pigs were farrowed from dams which had been taken by hysterectomy.[9] The dams were raised in a brooder[10] until 4 weeks of age, then were raised under farm conditions. For two months, they were housed in a box stall of a horse barn, then placed on alfalfa pasture with access to a cattle shed. They were "self-fed" a balanced ration and had access to an automatic waterer. The dams had maintained a high state of health and level of performance.

Experiments 3, 4, and 5: Diseased Pigs.—Presence of disease was based on herd history and careful examination of the viscera and nasal turbinates of 214 hogs from the herd at slaughter. Atrophic rhinitis was diagnosed by the large number of undersized and deformed turbinates and deformed nasal septa. Virus pneumonia was diagnosed from the gross pathology and histopathology. The histological lesions consisted primarily of small and large round cell peribronchiolar and perivascular infiltration.

From the Departments of Animal Pathology and Hygiene (Caldwell and Young), Animal Husbandry (Sumption), and North Platte Experiment Station (Adams), University of Nebraska, Lincoln.

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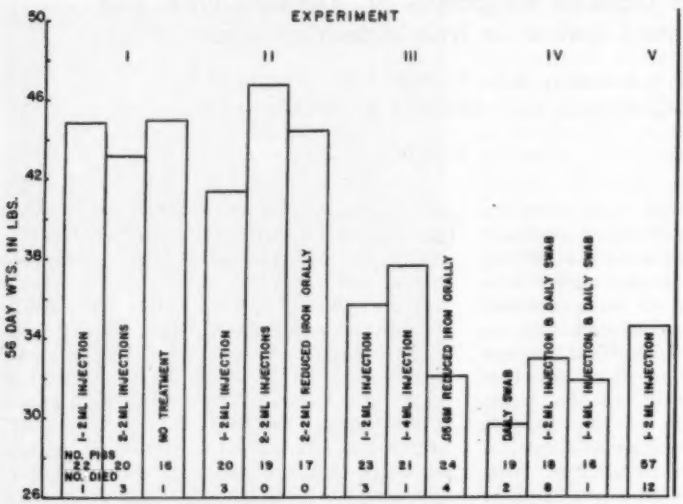
The assistance of R. Haney and C. Swanson in conducting experiments 3 and 4, and E. Svec in analysis of data for experiments 3 and 4 is acknowledged. The injectable iron used in experiments 3, 4, and 5 was supplied by Armour Laboratories, Chicago, Ill.

*Pigs used in experiments 1 and 2 from Nebraska Experiment Station project 520: Disease Control through Repopulation of Farm Herds with Disease-Free Swine. This project is supported in part through Regional Research Funds, North Central Technical Committee, 13.



Graph 1—Average growth response of pigs to various iron treatments: experiments 1 and 2 "disease-free" pigs; experiments 3, 4, and 5 diseased pigs.

Twenty-one litters** were used and were divided as in experiments 1 and 2. The eight litters used in experiment 3 were each divided into three treatment groups: (1) oral treatment of 0.05 Gm. of reduced iron at birth; (2) 2 ml. of iron-dextran injected at 1 to 2 days of age; (3) 4 ml. of iron-dextran injected at 1 to 2 days of age. In experiment 4, six litters were used, each divided into three treatment groups: (1) a swab treatment in which the dam's udder was painted with copperas solution (0.05 Gm./ml.) daily; (2) a swab treatment daily plus 2 ml. of iron-dextran injected at 1 to 2 days of age; (3) a swab treatment daily plus 4 ml. of iron-dextran injected at 1 to 2 days of age.

TABLE 1—Analysis of 56-Day Weights of Pigs Given Supplemental Iron from Various Sources

	Experiments							
	1		2		3		4	
	d.f.	M.S.	d.f.	M.S.	d.f.	M.S.	d.f.	M.S.
Litters	4	248.86**	3	1235.15**	7	420.35**	5	524.68**
Treatments	2	25.84	2	136.71	2	161.62*	2	38.42
Error	46	57.79	47	65.36	50	48.31	34	30.95

d.f.= degree of freedom; M.S.= means of squares; *= P.05 (probability of error one chance in 20); **=P.01 (probability of error one chance in 100).

Seven litters were used in experiment 5. The pigs in these litters were all given one treatment of 2 ml. of iron-dextran injected at 1 to 2 days of age.

These pigs were all raised on concrete and had access to creep feed from 7 to 56 days of age. Mortality from birth to 56 days of age was 17.4 per cent.

RESULTS

The "disease-free" pigs showed a consistently high rate of gain to weaning age (graph 1). The pigs given no iron treatment in experiment 1 gained faster than pigs which were injected with 2 or 4 ml. of iron-dextran. Pigs given reduced iron orally in experiment 2 were heavier at 56 days than those injected with 2 ml. of iron-dextran. There was little variation in the 56-day weights within the various treatment groups within the nine "disease-free" litters studied and statistical analyses indicate that treatment effects had no significant influence on 56-day weights of these pigs (table 1).

Weights of pigs at 56 days in the diseased herd were lower and more variable than those in the "disease-free" herd (graph 1). There was, by contrast, a definite response in growth rate in experiments 3 and 4 as evidenced by 56-day weights in pigs injected with iron-dextran. The response was more marked than that obtained by oral or swab treatments. Treatment effects were statistically signifi-

**Pigs used in experiments 3, 4, and 5 were from the University of Nebraska Swine Breeding Project at the North Platte Experiment Station, a project being carried out in cooperation with the Regional Swine Breeding Laboratory, Agricultural Research Service, U.S.D.A.

cant in experiment 3 but not in experiment 4 (table 1).

DISCUSSION

It is generally recognized that all anemias are not caused by nutritional deficiencies. Some nonnutritional anemias are apparently induced or aggravated by the disease load the animal may harbor. If this hypothesis is true, a herd with a low disease level should not benefit materially from injectable or oral iron treatment.

It has been conservatively estimated that 50 per cent of the swine in the United States are affected with VPP.[3] Workers at Cambridge University estimated 50 per cent of the swine in England are affected with VPP, depressing the feed conversion efficiency by 20 per cent and the growth rate by 16 per cent.[4] In the Middle West (U.S.), it has been reported that 50 to 70 per cent of pigs slaughtered had lesions of pneumonia.[12] Of a group of 250 market hogs examined at slaughter from one herd, 56 per cent showed typical VPP lesions and 60 per cent were affected with AR.[11] This latter group was from the same population as those to which iron treatments were administered in experiments 3, 4, and 5.

In Canada, 21 of 234 pigs examined postmortem were affected with AR. The infected pigs were significantly lighter at 56, 85, 112, 140, and 158 days.[6] Work at Beltsville has shown that pigs affected with AR average 3.9 and 6.4 per cent lighter at 56 and 140 days of age, respectively, than those not affected. The uninfected pigs showed an average of 5.2 per cent greater daily gains than those with AR.[7] It seems apparent that disease is prevalent in the swine population and that the present iron requirements are based on fulfilling needs of pigs carrying a relatively high disease level.

It may be necessary to re-evaluate the iron requirements in "disease-free" pigs. Tracer studies[5] using Fe^{59} indicate the drop in hemoglobin (Hb) is not a real loss but diminution of a given amount of Hb by the growth of the pig. This is apparently a normal function. This work further indicated that the average life-span of red blood cells (r.b.c.) is 63 $\pm$ 16 days. At an early age, the baby pig's body starts manufacturing its own r.b.c. On the basis of this experiment, it appears that "disease-free" pigs on early creep feed containing iron will be able to increase this r.b.c. count before anemia becomes a problem. However, it is possible that the pig whose spleen, liver, and bone marrow are under the stress of a disease load may not have the same capacity.

Hog growers are confronted with new ideas and materials directed at increasing production. Many of these materials do increase production under certain conditions. If, however, careful records were kept, many products on the market might not show an economic return. From a purely economic viewpoint, the 3- to 4-lb. increase per pig, shown in experiments 3 and 4 for pigs injected with iron-dextran over those given iron orally, might not prove to be of value to the hog grower.

Considering that the recommended dosage of injectable iron presently costs 25 to 30 cents per pig[1] plus the possible additional feed required for a 3- to 4-lb. gain, oral treatment (with reduced iron costing only a few cents) is still the more over-all economic treatment. Injectable iron might be justified by a reduction in mortality but, in these experiments, there was a trend indicating that increased mortalities occurred in some iron-injected groups (graph 1). This supports German research[2] which showed that uninjected controls remained healthy whereas the iron-injected group showed lack of appetite, weakness, loss in weight, and finally death. Thus, caution should be exercised in administering injectable iron.

Ham damage was observed in 4- to 5-week-old pigs at postmortem in this laboratory following use of injectable iron. The damage was probably due to infection introduced at the time of iron injection, resulting in local tissue granulation. From the standpoint of growers, packers, and consumers, a preferable site for injection might be some low value area such as the neck muscles.

Since the rates of gain on the swab treatments in experiment 4 were less than those in experiment 3, it is proposed that iron of this nature may be unpalatable and that the pigs did not nurse their swab-treated dams readily. Pigs in experiment 4 were compared with those in seven litters farrowed at the same time which received 2 ml. of iron-dextran, designated as experiment 5. As shown in graph 1, experiment 5, average 56-day weights were 34.6 com-

pared to 32.3 for experiment 4. This seems to indicate that iron given in swab form may not be as effective as other oral treatments.

SUMMARY

Baby pigs within two herds of swine, one "disease-free" and the other with a known disease history, were treated with various types and levels of iron supplements. Mortality and 56-day weights were used as experimental criteria.

Injectable iron was of no benefit to the 114 pigs within the "disease-free" herd when their development was compared to the negative control group in which the pigs were given no supplemental iron. The other herd, consisting of 177 pigs with a known disease history, atrophic rhinitis, and virus pig pneumonia, primarily, responded more to injectable iron-dextran than to oral treatments.

In giving injectable iron to baby pigs, the relative economics, e.g., cost of material, site of injection, and relative incidence of mortalities, must be considered.

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Iron Dextran and Anemia.—The use of iron dextran is known to prevent or cure anemia; however, research has shown that the hemoglobin level is not a measure of iron deficiency, since certain basic metabolic enzymes can be significantly deficient when the hemoglobin is normal.

Many supposed signs of anemia are not due to a low hemoglobin level. When hemoglobin is within the normal range, absorption of iron from the gut is greatly reduced, making it difficult to build up body iron reserves and thus to replenish iron deficiency in the enzyme systems. When iron dextran is injected intramuscularly, it is completely absorbed, thus enabling the animal to maintain its hemoglobin as well as to replenish its body iron reserve.—*T. Stewart in Tijdschr. diergeneesk. (Oct., 1958): 1056.*

Anemia of Suckling Pigs.—Iron is not passed through the sow's milk; therefore, only that which is obtained from the dam during intrauterine life is stored in the blood and liver of the young pig. If the sow's system has an adequate supply of iron, it should be eight to ten days before the hemoglobin content of the pigs' erythrocytes decreases.

Iron dextran preparations containing 100 mg./ml. are readily absorbed, after intramuscular injection, by 5- to 7-day-old pigs and should supply sufficient iron until the pigs are 4 to 5 weeks old. They can then get iron from their feed and water. If the iron content of the soil and water is poor, a second injection should be given at 5 weeks of age.—*J. Koves in Magyar allatorv. Lap. (Sept., 1958): 212.*

Estrogen in Red Clover

Growing red clover, like Australian subterranean clover, was found, in New Zealand, to contain substances which have potent estrogenic effects on ewe lambs. Reproductive disturbances resulted, apparently, because these substances induced estrus without ovulation.—*Nature, 182, (Oct. 25, 1958): 1175.*

Problems of Nomenclature in Parasitic Diseases

Guest Editorial

Ever since Adam, the problem of nomenclature has plagued mankind, and needless controversies have arisen over the relatively simple process of naming things. There is no right or wrong in such controversies and they can go on endlessly to create chaos. On the other hand, new words become established and valid because of their acceptance and use over long periods of time by scientists, and precedence and custom are legitimate guides.

The Choice of Suffix

A number of years ago, after considerable study of the historical processes involved, I proposed that we bring the terminology of parasitic diseases in line with the other diseases named for the biological cause—that we use the suffix *-osis* for cases of parasitic disease; *-iasis* for the asymptomatic, relatively lesionless, carrier state; and *-ism* for both states indifferently or collectively. At the time, I did not state the historical and semantic reasons for this suggestion because they were evident to anyone spending an afternoon in a library.

In a recent article, however, Drs. J. M. R. Innes and L. Z. Saunders have tagged this effort as "an interesting example of polemics in semantics," justifying a change to a different system of nomenclature on the idea that *-iasis* and *-osis* mean the same thing. This latter is perfectly correct, but they go on to say "however most pathologic words ending in *iasis* seem to refer to a condition in which the name of the causal agent is incorporated in the word, namely trypanosomiasis, filariasis, babeziasis, helminthiasis, but there are exceptions such as brucellosis, tuberculosis, listeriosis." This is a plain misstatement.

Disciplines Differ

Far from being the exception, most diseases named for the biological cause carry the *osis* terminus. This is almost universally true with diseases due to bacteria. The same thing is generally true of the diseases caused by higher plants. A few diseases due to protozoa carry the *-iasis* but common protozoan diseases in North America are anaplasmosis, coccidiosis, and toxoplasmosis. As far as the exotic forms are concerned, Curasson's "Traité de Protozoologie Veterinaire et Compareé," published in 1943, is a standard reference. He uses the *-ose* terminus in the vast majority of cases.

The primary diseases caused by helminths (cysticercosis, haemonchosis, trichinosis, and so forth) carry the *-osis* terminus traditionally. Those cases where the pathogenic state of the parasite is in some doubt often carry the *-iasis* suffix (*i.e.*, taeniasis, gongylonemiasis, etc.). On the basis of the record, it is perfectly apparent that the continued uses of the suffix *-iasis* are almost entirely in the field of parasitology.

Historically

The indifferent usage of *-osis* and *-iasis* came into parasitology with Flemming's translation of Neuman's "Parasites and Parasitic Diseases of Domestic Animals" in 1892. Apparently the original idea was to use the Greek suffix for Greek roots and the Latin for Latin roots. The 1911 edition of Neveu-Lemaire ignored the *-iasis* terminus almost completely. Instead of picking up the more consistent usage of the early Neveu-Lemaire, Underhill in 1920 apparently was forced to use both termini by the usage then current in the English speaking world. However, he plainly indicated his preference by the title of his book which was "Parasites and Parasitosis of Domestic Animals." Lest there should be any confusion about what he meant, the subtitle of the book was "The Zoology and Control of the Animal Parasites and the Pathogenesis and Treatment of Parasitic Diseases." No less an authority than the late N. A. Cobb also indicated his preference when he proposed to the American Medical Association in 1932 that nematosis be used to indicate a morbid condition associated with nematode parasites.

By the early 1940's it was apparent that people coining new names were applying either *-osis* or *-iasis* on the basis of euphony instead of a logical or historical reason. The preference for naming morbid conditions with the *-osis* suffix was reasonably well established in parasitological literature. The *-osis* suffix was ineradicably established in the bacteriological and mycological literature. Therefore, I suggested,

in 1947 and 1949, that the parasitologists, in essence, go along with the other etiological sciences and use *-osis* to indicate disease due to parasites in coining new terms. Furthermore, it might be worthwhile to apply *-iasis* to the asymptomatic, essentially lesionless, carrier state.

Because of the size of the parasites involved, the helminth carrier state has always been more easily recognized than in bacterial or protozoan infections. To be sure, there are intergrades between the condition of disease and no disease but intergrades do not invalidate a dichotomous classification. If this were true, no biological classifications could stand. As far as the helminths are concerned, 90 to 99 per cent of helminthisms can be accurately classified as helminthosis or helminthiasis. If etiological sciences in other areas need a term to indicate the carrier state, they thus have one already made.

THE LOGICAL CHOICE

It seems to me that, in this case, the historical precedent is so clear that one has little choice but to name new parasitic diseases with the *-osis* suffix. Recently, a number of distinguished parasitologists including Dr. A. Kotlan of Budapest, Dr. R. Wetzel of Giessen, Dr. H. Madsen of Copenhagen, and Dr. H. McL. Gordon of Sidney have dealt with nomenclatural problems and have followed this usage. Only time can determine if the *-iasis* to indicate the carrier state is useful and valid. Not only are priority and custom important in nomenclature, but consistency is also desirable. In their own article, Innes and Saunders use the *-osis* suffix for more diseases than the *-iasis*.

Surely the whole field of biological causes of disease is related; surely a consistent nomenclature is desirable; surely an historically consistent, hitherto controversy-free attempt to bring order into the nomenclature should not be discarded because the feelings of a few scientists are contrary.—*J. H. Whitlock, Department of Pathology and Bacteriology, New York State Veterinary College, Cornell University, Ithaca, N.Y.*

Rabies in Animals (Other than Man) in the United States—1957

—*U. S. Public Health Service*

Abstracts

Stenosis of the Pulmonary Artery in Calves

Fifty per cent stenosis of the pulmonary artery in 8 calves produced hypertrophy of the right ventricle of the heart in 4 animals and passive congestion of the liver in 2 animals. The heart weights of the 4 animals were significantly heavier at the 5 per cent probability level than the heart weights of 4 comparable normal animals.

These findings support the belief that pulmonary tissue damage, including pulmonary vascular disease, leads to right ventricular hypertrophy and hepatic passive congestion. These findings are similar to those found in the condition termed "brisket disease" in cattle.—[*L. Keith Wayt: Experimental Stenosis of the Pulmonary Artery in Calves. Am. J. Vet. Res., 20, (March, 1959): 265-269.*]

Copper and Iron in Livers of Undernourished Cattle and Sheep in Brazil

Analysis of the copper and iron values in livers of cattle and sheep from northeastern and northern Brazil are given. The copper contents of livers was consistently low in all samples collected from cattle as well as from sheep in the coastal area of northern Brazil, where mineral requirements were inadequate. Many liver samples showed high iron values which could only in part be related to the simultaneous occurrence of low copper values.

The results of the analysis of iron in the livers showed no relationship between the values of copper and iron. High values of iron were found in livers with low and high copper contents, and normal iron values in livers with low copper contents. The low values of copper in liver samples collected in the coastal areas of northern and northeastern Brazil suggested that, in these areas, cattle are cobalt-deficient as in western Australia, where the "wasting disease" of cattle appears, or in South Australia where the "coast disease" of sheep is found.—[*Emilio Mitidieri, Ottilia R. Affonso, and Carlos H. Tokarnia: Copper and Iron in Livers of Undernourished Cattle and Sheep from Northeastern and Northern Brazil. Am. J. Vet. Res., 20, (March, 1959): 247-248.*]

A Succinoxidase Inhibitor in Feeds Associated with Muscular Dystrophy in Lambs and Calves

An inhibitor of the succinoxidase system was sought in feeds known to cause muscular dystrophy in lambs and calves. Such an inhibitor was found in alcoholic extracts of several kinds of roughage, and it was generally more abundant in feeds associated with muscular dystrophy than in feeds not so associated. This inhibitor was almost absent from growing hay, but it appeared during the curing process, especially if curing was prolonged by rain and cool weather.

The succinoxidase-inhibitory activity of this factor was partly reversed by the addition of *alpha*-tocopherol to the system. The succinic dehydrogenase system was inhibited, the cytochrome oxidase system was partly inhibited, and the xanthine oxidase system was not inhibited by levels of the factor which completely inhibited the succinoxidase system.

This succinoxidase inhibitor may be responsible for muscular dystrophy in lambs and calves born of dams maintained on feeds containing excessive amounts of the inhibitor.—[*Gloria H. Cartan and Karl F. Swingle: A Succinoxidase Inhibitor in Feeds Associated with Muscular Dystrophy in Lambs and Calves. Am. J. Vet. Res., 20, (March, 1959): 235-238.*]

Penicillin V for Bovine Mastitis

Using varying dose schedules, 49 cows in different stages of lactation were studied (1) to compare penicillin concentrations in the milk from fibrotic and inflamed quarters, and (2) to determine the efficacy of benzathine penicillin V in the treatment of mastitis caused by penicillin-susceptible organisms.

Results support a previous postulate that penicillactia results from the active participation of the mammary gland rather than a threshold mechanism of blood circulatory spill. Penicillin is effective against susceptible organisms if the required concentrations are attained within the mammary tissues.—[*C. J. Hollister, R. A. Huebner, W. B. Boucher, and Thomas Demott: Parenteral Benzathine Penicillin V in Bovine Mastitis. Am. J. Vet. Res., 20, (March, 1959): 287-296.*]

Embryonal Nephroma in Swine

This study was based on the examination of 299 case reports of embryonal nephroma in food-producing animals, 129 of which were complemented by stained sections or other material. Embryonal nephromas were found most frequently as single lesions in the kidneys of pigs under 1 year of age. They were firm, lobulated, light-colored growths, which had distinct capsules and numerous trabeculae of dense connective tissue. Microscopically, they were made up of epithelial and connective tissue components, both of which had an embryonic appearance.

These tumors were rapidly growing structures which showed intense mitotic activity but rarely metastasized. Evidence of invasiveness was lacking in all of the tumors examined.

Two points of variance from commonly accepted concepts were found: (1) The tumor occurred approximately twice as frequently in females as in males—106 and 54 times, respectively; (2) although many considered the nephroma to be the most common tumor of swine, it accounted for

only 23.4 per cent in this collection, while the malignant lymphoma made up 50.3 per cent.—[*D. J. Sullivan and W. A. Anderson: Embryonal Nephroma in Swine. Am. J. Vet. Res., 20, (March, 1959): 324-332.*]

Hemagglutination Test for the Detection of Vibrio Fetus Antibody

A hemagglutination test has been developed for detection of antibody against *Vibrio fetus*. Sheep erythrocytes sensitized with a polysaccharide fraction of *V. fetus* have been agglutinated by specific serums produced in rabbits and by serums of naturally infected bulls. The fraction apparently represents a type-specific O antigen common to a number of individual strains rather than a species-wide antigen. The specificity of the hemagglutination reaction was shown by its inhibition by the free polysaccharide. Some advantages, characteristics, and principles concerning the hemagglutination test are discussed.—[*M. Ristic and C. A. Brandly: Characterization of Vibrio Fetus Antigens. II. Agglutination of Polysaccharide-Sensitized Sheep Erythrocytes by Specific Antiserums. Am. J. Vet. Res., 20, (Jan., 1959): 154-161.*]

Microcard Reprints of Research Journal Now Available

Microcard reprints of Volumes 1 to 17 of the *American Journal of Veterinary Research* are currently available from J. S. Canner and Company, Inc., Library Booksellers, 618 Parker St., Boston 20, Mass. These volumes encompass the years 1940-1956, and sell for $67.50.

Virtually any of the various machines designed for microcard print will serve for reading. However, the microcard reader which has been specifically designed for reading microcards is recommended. This particular model ranges from pocket size to the conventional one that rests on a table but is portable enough to be easily carried.

Further information regarding these readers may also be obtained from J. S. Canner and Company.

Books and Reports

Diseases of Swine

This excellent text should be assured of acceptance by all veterinarians interested in swine problems. Its conception and the organization of the material in each chapter is highly commendable. The 53 chapters were written separately by a total of 48 competent authors and reviewed by eight authorities. The subjects of the chapters, which are classified under seven sections, indicate the completeness of this text. The sections and the number of chapters in each are: Anatomy and Physiology (3); Viral Diseases (11); Bacterial and Mycotic Diseases (12); Parasitic Diseases (3); Toxemias and Poisonings (6); Miscellaneous Diseases (9); Surgery (4); and Nutrition, Feeds, and Management (5). Thus the purchaser would get more than the title indicates because the text ably covers much more than diseases.

Although, of value for all who are concerned with swine problems, the text probably is least adequate for practitioners, chiefly because the authors of the chapters on diseases often lack clinical experience and, as a result, some clinical descriptions are disappointing. The errors are more of omission than of commission.

One of the greatest committed errors is the inclusion of two words on page 134 in the otherwise excellent article on hog cholera. To state that current infection with another septicemic organism such as *"Erysipelothrix rhusiopathiae"* is a common cause of so-called "serum breaks" is just not true. Before the advent of modified cholera vaccines, it was a routine procedure to treat nonvaccinated herds, in which some pigs were sick with acute erysipelas, with regular doses of anti-hog cholera serum and virulent virus and to also give the visibly sick pigs a dose of penicillin or anti-swine erysipelas serum. The development of new cases of erysipelas usually stopped abruptly and without postvaccinal complications.

In the otherwise good chapter on erysipelas, the clinical and necropsy pictures in the acute (and subacute) form will be of little help in making a diagnosis. Among the signs and lesions not mentioned are those indicating interference with the lymphatic system such as edema of the limbs, ears, and nose (the latter causing the stenotic breathing which often indicates the diagnosis before the hiding victim can be seen); also the "juicy" lymph nodes and the intraperitoneal coagulum and "cobwebs." Also not mentioned are the frequent purplish marbled kidneys and the controversial "paint brush" hemorrhages on the wrinkled stomach.

This book should help to fill a long-felt need which was only partly satisfied by the excellent but limited brochure "Infectious Diseases of Swine" by H. C. Smith, in 1957, the only other worthy modern treatise on the subject.—[*Diseases of Swine. Edited by Howard W. Dunne. 716 pages; illustrated. Iowa State College Press, Ames, Iowa, 1958. Price $12.50.*]—*W. A. A.*

Speaking of Pets

This guide to the care, feeding, and training of the more popular varieties of pets contains 224 pages and is illustrated with a section of photographs of pets.

Some of the pets on which detailed information is given are: birds, cats, chinchillas, dogs, fish, guinea pigs, hamsters, insects, monkeys, porcupines, rabbits, skunks, snakes, squirrels, tortoises, and white mice. There is also a section on the correct lighting, angles, and techniques to use in photographing a pet.—[*Speaking of Pets. By H. H. Miller. Fleet Publishing Corp., New York, N. Y. 1958. Price $3.95.*]

THE NEWS

Ninth Annual Animal Care Panel Meets in Chicago

Reports ranging from "An Early History of Animal Experimentation and Care" to "A World Survey of Monkey Services" highlighted three days of technical discussion at the ninth annual meeting of the Animal Care Panel held in Chicago last December. More than 500 people attended this meeting.

Two special areas of interest were covered—a symposium on obtaining, maintaining, and using specially bred pathogen-free animals and a symposium devoted to animal quarter construction.

The use of tranquilizers prior to surgery was described by Dr. William C. Dolowy (ILL '53), University of Illinois, Chicago Professional Colleges. Dr. John L. Schmidt, M.D., Abbott Laboratories, discussed cardiovascular research and species of animals most likely to yield information about heart and blood vessel diseases. "Special breeds of small pigs as well as the baboon may prove valuable in some research," Dr. Schmidt said. A 34,000-mile trip through Asia and Africa to inspect dealers' and trappers' facilities for laboratory monkeys was described by Dr. Alan A. Creamer (UP '48), Merck, Sharp and Dohme, Rahway, N.J.

Speakers in the symposium on animal quarter construction were: Drs. N. R. Brewer (MSC '37), University of Chicago—animal quarter design; and T. W. Penfold (WSC '46), University of Washington, Seattle—common errors in laboratory design.

The Charles A. Griffin Award for 1958 was presented to Dr. John B. Nelson, Rockefeller Institute for Medical Research, New York, in recognition of his outstanding contribution to the field of disease control of laboratory animals.

Regarding the election of officers for the coming year, Dr. Bennett J. Cohen (COR '49), director of the U.C.L.A. Medical Center Vivarium, was chosen president, succeeding Dr. Jules S. Cass (OSU '36), Kettering Laboratories, University of Cincinnati, School of Medicine. Dr. Robert J. Flynn (MSC '44), Argonne National Laboratories, Lemont, Ill., was reelected secretary-treasurer and Dr. N. R. Brewer (MSC '37), University of Chicago, was reelected chairman of the board of editors of the *Proceedings of the Animal Care Panel*, the Society's official journal.

Dr. Poppensiek to Succeed Dr. Hagan at Cornell

Dr. George C. Poppensiek will succeed Dr. William A. Hagan as dean of the New York State Veterinary College at Cornell University. He will also become professor of microbiology. The appointment, made by the Cornell board of trustees and approved by the trustees of the State University of New York, will become effective July 1, 1959, upon Dean Hagan's retirement (*see* the JOURNAL, Feb. 1, 1959, p. 151).

Dr. George C. Poppensiek

Dr. Poppensiek is head of immunological investigations at the U. S. D. A.'s Plum Island Animal Disease Laboratory on Long Island, N.Y. He received his V. M. D. degree from the University of Pennsylvania in 1942 and a M. S. degree from Cornell University in 1951. While at Cornell, he studied under Dean Hagan.

At Cornell's veterinary college, Dr. Poppensiek has served as acting professor of bacteriology and as director of the diagnostic laboratory. He has also been a research associate with the veterinary virus research institute at Cornell.

Before he joined the Cornell faculty, Dr. Poppensiek served as a department head with Lederle Laboratories, New York, assistant professor of veterinary science at the University of Maryland, and assistant instructor at the School of Veterinary Medicine, University of Pennsylvania.

Dr. Poppensiek is a member of the U. S. Livestock Sanitary Association, the AVMA, Phi Zeta, and Sigma Xi. In 1958, he was awarded a certificate of merit from the U. S. D. A. for outstanding service.

Four-State Officers and Directors Meeting Held at Purdue

The third annual four-state officers and directors meeting was held last October in Purdue University's Union Building in Lafayette, Ind. Dr. J. A. McCoy, of Ohio, acted as chairman.

In attendance at the conference were 27 veterinarians from Indiana, Illinois, Michigan, and Ohio. Topics of discussion were: constitution and bylaws of state associations; problems and solutions in planning for a state association convention; working relationships between state associations and departments of agriculture; practice acts; and ethical problems.

Regarding the fourth annual meeting planned for this year, Dr. C. D. Barrett of Akron, Ohio, was elected chairman and Dr. L. M. Borst of Indianapolis, Ind., secretary.

Dr. Charles W. Brown

AMONG THE STATES AND PROVINCES

Georgia

Georgia-Carolina Association.—Newly elected officers of the Georgia-Carolina V. M. A. are: Drs. W. S. Carr, Aiken, S. Car., president; M. E. Nunnery, Augusta, Ga., vice-president; and J. A. Schmitz, Augusta, Ga., secretary.

S/MURRY E. NUNNERY, *Vice-President.*

Indiana

"The Hoosier Veterinarian" Makes Its Bow.—The first issue of *The Hoosier Veterinarian* edited by the Indiana V.M.A. came off the presses last December as the Association's long-sought official organ. To run on a quarterly basis, this four-page enamel newsletter is devoted to the happenings of the individual Indiana veterinarian and, particularly, to items of interest from local associations.

With 400 veterinarians to contact, the officers of the Indiana V.M.A. hope that this vehicle will help improve communications "from the state level down and from the local level up." *The Hoosier Veterinarian* is further intended to inform the members of the acts and decisions that the Indiana V.M.A. undertakes to solve their needs and problems.

Iowa

Dr. Brown Retires as Veterinarian in Charge of State's A.D.E. Activities.—From 1947 until his retirement, Dr. Charles W. Brown (ISC '10) was veterinarian in charge of the cooperative animal disease control and eradication activities for the U.S.D.A. in Iowa. He had been engaged in regulatory work for more than 44 years with the former Bureau of Animal Industry and the Animal Disease Eradication Division.

A native of Iowa, Dr. Brown practiced in Corydon, Iowa, before entering the federal service in 1913 with the Meat Inspection Division at Kansas City, Mo. Since that time, he has served on the field forces in Iowa, on the prevention of hog cholera, and in Florida, on tick eradication.

In 1928, Dr. Brown was transferred to Texas as assistant to the veterinarian in charge of B.A.I. programs. Early in 1947, he was transferred from Texas to Little Rock, Ark., as veterinarian in charge of animal disease control and eradication.

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Dr. Blake Named Veterinarian in Charge of State's Animal Disease Eradication.—Dr. Grant E. Blake (TEX '46) was appointed veterinarian in charge of the U.S.D.A.'s Animal Disease Eradication activities in Des Moines, effective last October. He replaces Dr. C.W. Brown

Dr. Grant E. Blake

(ISC '10), who retired after many years in federal service.

Dr. Blake was formerly assistant veterinarian in charge of animal disease eradication activities in the Des Moines office, a post he held from July, 1957. Prior to this Iowa post, Dr. Blake was assigned to the Madison, Wis., station, from January, 1953 to 1957, as assistant veterinarian in charge; a general practitioner in Provo, Utah; and veterinary director with the Utah Fur Breeders Cooperation, Midvale, Utah. He also assisted in the campaign against foot- and mouth disease in Mexico and for awhile was in charge of the brucella antigen production laboratory, in Beltsville, Md.

Under Dr. Blake's direction, the first milk ring test antigen was produced on a mass scale.

Ohio

State Association's Diamond Anniversary.—The seventy-fifth annual convention of the Ohio State V. M. A. met at the Neil House Hotel in Columbus, Feb. 4-6, 1959. Registration totaled 803.

Opening the scientific portion of the convention were general sessions on preventive medicine. Dr. C. D. Van Houweling, Washington, D. C., discussed veterinary medicine in Russia. In addition, a film on rabies was shown and two panel discussions were heard. Appearing on the leptospirosis panel were Drs. F. H. Wentworth, M.D., Columbus; E. F. Donovan, Ohio State University; James E. Jones, Mt. Sterling; H. E. Goldstein, Reynoldsburg; and E. H. Bohl, Columbus.

Included on the rabies panel were: Drs. E. S. Tierkel, Atlanta; Paul R. Schnurrenberger, Columbus; and R. Kimbrough, M.D., Ironton.

The remainder of the meeting was divided into small and large animal sections. Speaking on small animals were: Drs. R. A. Stocking, Jr., Los Angeles, Calif.—surgical procedures; D. Maksic, University of Illinois—x-ray diagnosis; C. S. Alvanos, Toledo, and John L. Jones—clinic versus hospitalization; Thomas E. Powers, and W. F. Loeb, Columbus—bacteriology and sensitivity tests; and B. W. Bernard, Cincinnati—a mission to Dr. Schweitzer.

Commencing the large animal section were discussions on veterinary medicine in vertical integration. Participating were: Drs. M. G. Smith, Columbus—effects on agriculture; L. M. Hutchings, Purdue University—educational phase; C. D. Van Houweling, Washington, D. C.—effects on the veterinary profession; and T. D. Morse, Washington, D. C.—summary of section program.

Others contributing to this section were: Drs. R. E. McKinley, Erie, Pa.—economics; David J. Ellis, East Lansing, Mich.—stress factors—dairy cattle and enteric factors—beef cattle; R. P. Todd, Miamiville—equine practice; J. D. Ray, White Hall, Ill.—swine respiratory problems; and D. L. Proctor, Lexington, Ky.—brood mares—management and disease factors.

Left to right—C. S. Alvanos, vice-president; H. G. Geyer, secretary; R. L. Rudy, president-elect; C. D. Barrett, president; J. A. McCoy, immediate past-president; and J. H. Helwig, treasurer.

The newly elected roster of the Association is: Drs. C. D. Barrett, Akron, president; Richard L. Rudy, Columbus, president-elect; Costas Alvanos, Toledo, vice-president; H. G. Geyer, Columbus, secretary; and John H. Helwig, Columbus, treasurer.

Oregon

Dr. Searles Appointed Supervisor of State's Meat Inspection Program.—Dr. William L. Searles has recently been appointed supervisor of Oregon's meat inspection program in the Department of Agriculture. He had been carrying on this work under temporary assignment since last October when he succeeded Dr. R. C. Sexauer who is now supervising federal meat grading on the East Coast (*see* the JOURNAL, Jan. 1, 1959, p. 47).

Dr. William L. Searles

Dr. Searles holds three degrees from the University of Illinois. He obtained B.S. degrees in agriculture and in veterinary science and in 1954 received his D.V.M. degree.

The year following graduation, Dr. Searles spent in meat inspection and disease control in Illinois, including meat inspection at the Chicago Union Stockyards. Prior to moving to Oregon, he operated his own animal hospital in Chicago. Dr. Searles served in the Navy from 1943 to 1946 and was an Air Force instructor in 1951-1952.

STATE BOARD EXAMINATIONS

IOWA—June 1-2, 1959, Office of the Division of Animal Industry, State House, Des Moines, Iowa, not later than 8 o'clock on the morning of June 1. Further information may be obtained from Dr. A. L. Sundberg, chief, Division of Animal Industry, State House, Des Moines 19, Iowa.

NORTH CAROLINA—June 22-24, 1959, Morehead Biltmore Hotel, Morehead City, N. Car. Dr. James I. Cornwell, secretary-treasurer, North Carolina State Veterinary Examining Board, 65 Beverly Rd., Beverly Hills, Asheville, N. Car.

TEXAS—Next licensing examination will be held June 1-3, 1959, A. & M. College of Texas, College Station. The completed application must be received in the Board office not later than 30 days before the examination date. Applications should be sent to Mr. T. D. Weaver, 207 Capital National Bank Building, Austin 16, executive secretary, State Board of Veterinary Medical Examiners.

UTAH—June 11-12, 1959, Utah State Capitol Building, Salt Lake City, Utah. Dr. Wayne Binns, chairman, Utah Veterinary Examining Board, 555 North Third East, Logan, Utah.

DEATHS

Star indicates member of AVMA

★**Balfour Bigelow** (WSC '33), 55, Turlock, Calif., died January 8, from melanocarcinoma. He had been ill for seven months. Born in Gridley, Butte County, Dr. Bigelow had moved to the Turlock area in 1918.

★**Bruce W. Blackburn** (COL '55), 35, Edgar, Neb., was killed when his car and a propane truck collided at a country road intersection near Ong, Neb., January 8.

The truck and the car were hurled 75 feet into a ditch where the truck landed on the hood of Dr. Blackburn's car and caught fire.

★**Ray C. Finkle** (CVC '10), 71, Seymour, Wis., a general practitioner in the Seymour area for 48 years, died at his home on December 28. He had been ill for several months.

★**Hugh L. Franklin** (KCV '18), 63, Greeley, Colo., died January 6 of pulmonary fibrosis and emphysema. Dr. Franklin was a general practitioner.

Audrey D. Moore (COR '10), Columbus, Ga., a native of Indian Falls, N.Y., and formerly in practice in Mt. Morris, N.Y., died in Georgia, Dec. 23, 1958, following a heart attack. He was returning from a visit with his brother in Umatilla, Fla., when his car ran off the highway and hit a tree. Dr. Moore retired from government service about two years ago.

Harvey F. Page (OSU '32), 50, Washington, Ind., died in the Daviess County Hospital, Dec. 7, 1958. Death was attributed to a heart attack.

Dr. Page was a past-president of the Indiana-Illinois V. M. A.

George G. Painter (GR '16), 77, Jackson Center, Ohio, who had practiced there for 42 years, died in his home December 22. Due to ill health, he had been in semiretirement for the last three years.

W. L. Pinckard (API '37), Cleveland, Tenn., 47, died in a local hospital on January 7, following a short illness. Dr. Pinckard had practiced in Cleveland for five years.

He had served with the Veterinary Corps in World War II and with the U.S.D.A. for five years before moving to Cleveland.

Elmer D. Rhoads (KCV '15), 67, Lincoln, Ill., died at the Abraham Lincoln Memorial Hospital on December 30. He had been in failing health for three years, following an automobile accident.

For the last ten years, Dr. Rhoads had been an inspector for the State Department of Agriculture.

Arthur N. Smith (UP '07), 81, St. Petersburg, Fla., died in a local hospital there, December 22. Born in Port Allegheny, Pa., Dr. Smith had moved to St. Petersburg only five weeks prior to his death.

★**Welcome C. Sprinkle** (TH '11), 72, Terre Haute, Ind., died at his home as the result of a blood clot on January 14. He had undergone surgery January 7.

Dr. Sprinkle's graduating class was the first from Terre Haute Veterinary College. At one time, he was employed by the government in testing cattle for tuberculosis in Mississippi. He also engaged in large animal practice in Tennessee and in Illinois. For the past 24 years, Dr. Sprinkle conducted an exclusive dog and cat practice in Terre Haute.

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Other Deaths Reported.—The following deaths have been reported. The usual information for an obituary was not supplied.

Andrew R. Campbell (ONT '23), 61, Guelph, Ont., died Oct. 17, 1958.

Arthur G. Hopkins (ONT '91), Saskatoon, Sask., died Aug. 8, 1958.

Frank Lane, 83, Russellville, Ark., died Dec. 15, 1958.

Harold W. Nurse (ONT '19), Plattsville, Ont., died Sept. 29, 1958.

Edward Rawn (COP '08), Luck, Wis., died Oct. 4, 1958.

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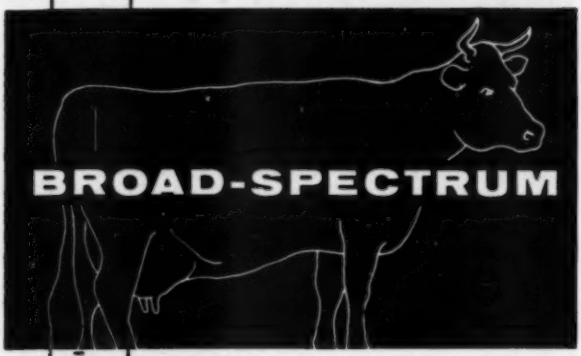

a specially prepared microcrystalline form of the
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Chloromycetin for suspension in an aqueous vehicle . . .

when used as an *udder infusion* assures penetration to every part of the treated quarter

Particularly Applicable to
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Professional literature will be sent on request.

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MEDICAMENTA VERA

Council Activities

The Council on Biological and Therapeutic Agents at its organization meeting in Chicago, Oct. 17, 1958, discussed a number of programs, which when activated, should render vital assistance to AVMA members in practice.

While the Council has no regulatory or police power, it can exert a powerful voluntary influence in the development and improvement of veterinary drugs.

Drug evaluation and the providing of up-to-date information on the status of certain biological and therapeutic agents are the primary objectives of the Council.

The Council established four action committees covering the following areas:

Therapeutic Efficacy,
Toxicology and Sensitivity,
Nomenclature and Advertising, and
Standards.

Throughout the discussion of the Council, the obligation for providing the veterinary practitioner with information that he, as an individual, has neither the time nor facilities to obtain, was the predominant theme.

The members of the Council were in unanimous agreement that they can best serve the profession only when made fully aware of problems individual members are facing in their daily activities. AVMA members are invited to direct their comments on these matters to the headquarters office for referral to the Council on Biological and Therapeutic Agents.

WOMEN'S AUXILIARY

President—Mrs. E. A. Woelffer, 115 Woodland Lane, Oconomowoc, Wis.
Secretary—Mrs. A. W. Eivers, 1745 S. 13th St., Salem, Ore.

Student Auxiliaries

The Auxiliaries to the Student Chapters of the AVMA are an active and interested group of young women who, while their husbands are in school, are taking a part which will well qualify them as Auxiliary workers. They have a sincere interest in the profession, and their activities are many and varied.

Money-raising projects are sponsored mainly for the purpose of having funds in order to send a delegate to the AVMA annual meeting. Programs are arranged to obtain speakers who will instruct as well as entertain. Emphasis is being made on public relations and the important part it plays in the profession. As one student wife expressed it: "As wives of veterinary doctors, we will have our role in the community." Not all of the meetings are strictly for business, however. Some are arranged for social activity in which the husbands can be included.

This year, as in the past, complimentary membership in the Women's Auxiliary to the AVMA is being extended to each of the senior wives. As a rule, the deans present these complimentary cards at the same time the honorary degree P.H.T. (Pushing Hubby Through) is presented.

With these complimentary membership cards the Women's Auxiliary to the AVMA extends to each recipient sincere congratulations on the splendid work accomplished during the years they have been student wives. We know they will continue their interest and activities in their state auxiliary.

Our best wishes to each, and a cordial invitation to continue membership in the Women's Auxiliary to the AVMA.

s/(Mrs. J. I.) Elizabeth A. Cornwell,
First Vice-President

• • •

Women's Auxiliary Help Needed for French Veterinary Exhibition

The following letter was received by Mrs. W. A. Hagan, who has submitted it for publication with the hopes that Auxiliary members will give Madame Godéchoux' project all the assistance possible.

January 6, 1959

Dear Mrs. Hagan:

In May will take place at the Veterinary School at Alfort, the Veterinary Surgeons' Meeting which, every third year, attracts a great many visitors from all parts of France.

On this occasion, a charity bazaar as well as an exhibition are usually organized. This year, to celebrate the International Congress, we want to prepare an exhibition, the theme of which will be:

The Veterinary Surgeon in the World
My Husband in his Country, Home, Family, and Profession

We are anxious to know if you can take part in this exhibition and send us any documents illustrating these subjects:

Photos of landscapes, local festivities, surgical operations.
Engravings, drawings, paintings, books.
Toys or models reproducing dwellings.
Characteristic or curious objects of life and customs etc.

Please let us know as quickly as possible if you and other members of the veterinary profession can contribute to the exhibition.

We hope that the meeting and the exhibition will be a great success and that a great many countries will take part in it in order to strengthen our friendship and help to mutual understanding.

Thank you in advance for your cooperation.

Yours sincerely,
s/Madame Godechoux

Editor's Note: Address replies to:

Madame Godéchoux
Présidente de l'Association Française des Femmes de Vétérinaires
10, Avenue de la Bourdonnais
Paris VII, France

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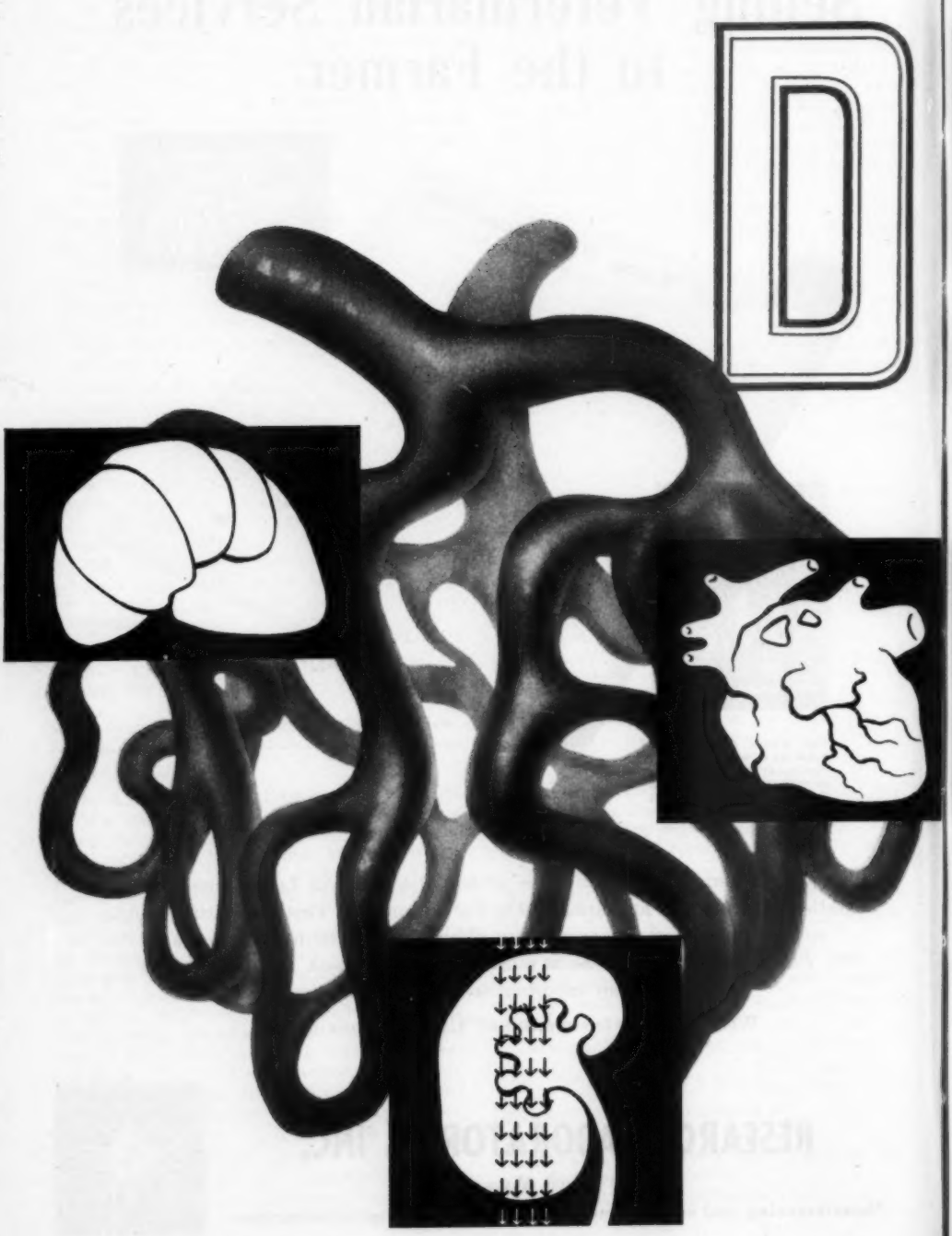

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DIURIL is an exceptionally potent, nonmercurial diuretic indicated in canine practice in the treatment of congestive heart failure, renal edema and hepatic ascites.

Orally administered, DIURIL grants prompt diuresis for as long as it's prescribed, both to initiate diuresis and to maintain an edema-free state. Its high therapeutic index and low inherent toxicity are evidence that DIURIL is the definitive diuretic for small-animal practice.

A NEW APPROACH TO DIURETIC THERAPY

Until now, there have been many drawbacks in the use of diuretics. The mercurials, for example, were renal irritants which could prove toxic to the patient. The newer drugs are characterized by early refractoriness, and are frequently not effective for the full course of treatment. (These drugs can also produce acidosis as a result of their nonspecific inhibition of carbonic anhydrase.)

But new DIURIL is subject to none of these disadvantages. Onset of action following oral administration is rapid (within two hours), and its major effect is complete in the dog within six hours. DIURIL has low inherent toxicity—apparently inhibits the action of carbonic anhydrase only in the renal tubular mechanism. Even in the presence of severe cardiac, renal or hepatic disease, this saluretic agent may be safely administered.

The safety of DIURIL is matched only by its effectiveness. In clinical trials with experimentally induced ascites in normal dogs, DIURIL produced a prompt and profound saluresis and diuresis, with a reduction of weight to normal. In case after case, DIURIL has shown itself to be the diuretic for treating small animals.

CLINICAL INDICATIONS

Congestive Heart Failure. DIURIL produces copious water diuresis, rapid reduction of ascites and loss of weight. Dramatic improvement in peripheral and pulmonary edema, dyspnea, cough, ascites and pleural effusion. Dogs frequently return to normal activity.

Renal Edema. DIURIL, when administered in such forms of renal edema as those associated with nephrosis and some types of nephritis, results in prompt excretion of retained fluid and electrolytes.

Hepatic Ascites. DIURIL may be administered even in cases of severe hepatic disease for the correction of fluid and electrolyte retention, unless the basic pathologic process within the liver is progressive.

Miscellaneous Edematous Conditions. Two common examples of fluid retention or secondary congestion of organs are: edema of the spinal cord (often a complication of "posterior paralysis syndrome"); and congestion of the mammary gland in postparturient bitches deprived of their litters (or those in which false pregnancy is a problem). DIURIL frequently produces rapid relief from such symptoms by inducing prompt loss of excess fluid.

Dosage: 5-10 mg./lb. of body weight, two or three times daily.
Supplied: No. 55621—DIURIL Tablets (Veterinary)—0.25 Gm. each—bottles of 100. Sold to veterinarians only.

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COMING MEETINGS

Notices of coming meetings must be received 30 days before date of publication.

Middle States Public Health Association. Tenth annual meeting. Hotel Savery, Des Moines, Iowa, April 1-3, 1959. Mrs. R. Campbell, co-chairman.

American Veterinary Radiology Society, April 7, 1959, Nassau Tavern, Princeton, N. J. Dr. Julius J. Fishler, Elkhart, Ind., secretary.

New Jersey, Veterinary Medical Association of. Diamond jubilee meeting. Princeton Inn, Princeton, N. J., April 8-9, 1959. John R. McCoy, Rutgers University, New Brunswick, secretary.

Oklahoma State University. Annual Oklahoma conference for veterinarians. College of Veterinary Medicine, Campus Veterinary Medical Center, April 13-14, 1959. John H. Venable, steering committee chairman.

Pennsylvania, University of. Fifty-ninth annual conference of veterinarians. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, April 28-29, 1959. Mark W. Allam, dean.

Illinois, University of. Fourth Biennial Symposium on Animal Reproduction. University of Illinois, Urbana, June 18-20, 1959. Address P. J. Dziuk, 111 Animal Genetics, University of Illinois, Urbana, for further information.

Third Pan American Congress of Veterinary Medicine and Ninety-Sixth Annual Meeting, American Veterinary Medical Association. Joint meeting. Kansas City, Mo., Aug. 23-27, 1959. H. E. Kingman, Jr., executive-secretary, AVMA, 600 S. Michigan Ave., Chicago 5, Ill. B. D. Blood, secretary-general, Directing Council, Pan American Congress of Veterinary Medicine, P.O. Box 99, Azul, F.C.N.G.R., Argentina, S.A.

Foreign Meetings

Veterinary Symposium in Israel (with International Farmers Convention); Veterinary Institute, Beit-Dagan, Israel, May 10-12, 1959. Dr. A. Kimron, Veterinary Institute, director. (Particulars are also obtainable from Dr. H. E. Newman, American Veterinarians for Israel, Box 145, Merrifield, Va.

International Veterinary Congress. Sixteenth session. Madrid, Spain, May 21-27, 1959. Prof. Pedro Carda A., general secretary, Calle Villanueva 11, Madrid.

U.S. COMMITTEE: Dr. W. A. Hagan, chairman, New York State Veterinary College, Ithaca, N. Y.; Dr. J. G. Hardenbergh, secretary, 600 S. Michigan Ave., Chicago 5, Ill.

Third World Congress on Fertility and Sterility. Amsterdam, Holland, June 7-13, 1959. Dr. L. I. Swaab, Sint Agnietenstraat 4, Amsterdam, Holland, honorary secretary.

Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Medical Association, the first Thursday of each month. James I. Chambers, 4307 Normanbridge Rd., Montgomery, Ala., secretary-treasurer.

Jefferson County Veterinary Medical Association, the second Thursday of each month. Dan P. Griswold, Jr., 714 S. 39th St., Birmingham, secretary.

Mobile-Baldwin Counties Veterinary Medical Association, the third Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

North Alabama Veterinary Medical Association, the second Thursday of November, January, March, May, July, and September, in Decatur, Ala. Ray A. Ashwander, P.O. Box 1767, Decatur, Ala., secretary.

Northeast Alabama Veterinary Medical Association, the second Tuesday of every other month. Leonard J. Hill, P.O. Box 761, Gadsden, Ala., secretary-treasurer.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. J. W. Langley, Jr., P.O. Box 5013, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. Gwyn Chapin, 2215 E. Calle Vista, Tucson, Ariz., secretary.

ARKANSAS—Pulaski County Veterinary Medical Society, the second Tuesday of each month. Harvie R. Ellis, 54 Belmont Drive, Little Rock, Ark., secretary-treasurer.

CALIFORNIA—Alameda-Contra Costa Veterinary Medical Association, the fourth Wednesday of Jan., March, May, June, Aug., Oct., and Nov. John S. Blackard, 420 Appian Way, Richmond, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of February, April, July, September, and December. Herb Warren, 3004 16th St., San Francisco, Calif., executive secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Paul S. Chaffee, 2333 McKinley Ave., Fresno, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. Norman E. Cunningham, 2703 "M" St., Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P.O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. V. Todorovic, 47 Mann Ave., Watsonville, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. T. J. Carleton, 325 W. Lockeford St., Lodi, Calif., secretary-treasurer.

Orange Belt Veterinary Medical Association, the second Monday of each month. Robert Lapham, 1194 W. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month. H. M. Stanton, 1122 S.E. U.S. Highway 101, Tustin, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. Robert Lawson, Los Altos, Calif., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, 2075 Silverado Trail, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. R. A. Mueller, 6420 Freeport Blvd., Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. E. P. Bogart, P.O. Box 758, Vista, Calif., secretary.

San Fernando Valley Chapter SCVMA, the second Tuesday of each month at 7:30 p.m., Hody's Restaurant, North Hollywood, Calif. Dr. V. H. Austin, 14931 Oxnard St., Van Nuys, secretary-treasurer.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, Calif., secretary.

Santa Clara Valley Veterinary Medical Association, the fourth Tuesday of each month. Kay Bewley, 1410 N. 4th St., San Jose, Calif., secretary.

Southern California Veterinary Medical Association, the last Wednesday of each month. Robert Schroeder, 9738 Tecum Rd., Downey, Calif., secretary.

Tulare County Veterinary Medical Association, the sec-

for **MASTITIS** *of*

dry and lactating cows

NEW SQUEEJET T.M.*

single-dose dispenser for

FURACIN® SOLUTION *veterinary*

brand of nitrofurazone

- delivers one full dose
- is discarded after using
- saves time
- is convenient, especially when a number of cows are to be treated
- unique package

*design patented

FURACIN has been shown to be strikingly effective in controlling mastitis under field conditions.[1,2] Of 7,123 lactating cows with acute mastitis, fair to excellent results were obtained in 5,597 (78%). Of 3,418 dry cows which had had mastitis during their previous lactating period, fair to excellent results were obtained in 3,104 (90%).

SUPPLIED A water-miscible liquid of FURACIN 0.2% in polyethylene glycol and water. Single-dose SQUEEJET disposable dispenser of 30 cc. Still available, bottles of 500 cc. with rubber stopper and 1 gal.

1. Mires, M. H., and Chadwick, R. H.: Vet. News **10**:3 (Jan.-Feb.) 1947. 2. Mires, M. H.: J. Am. Vet. M. Ass. **117**:49 (July) 1950.

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NITROFURANS—a *new* class of antimicrobials— neither antibiotics nor sulfonamides

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ond Thursday of each month. J. W. Cole, Rt. 5, Box 326, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Medical Society, the fourth Tuesday of every month. Gene M. Bierhaus, 2896 S. Federal Blvd., Englewood, Colo., secretary-treasurer.

Northern Colorado Veterinary Medical Society, the first Wednesday of each month, in Fort Collins. Dr. James Voss, Veterinary Hospital, Colorado State University, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Medical Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. A. P. Mayer, Jr., R.F.D. 2, Newark, Del., secretary-treasurer.

DISTRICT OF COLUMBIA—District of Columbia Veterinary Medical Association, the second Tuesday evenings of January, March, May, and October. R. B. Gochenour, 10109 Ashwood Dr., Kensington, Md., secretary-treasurer.

FLORIDA—Central Florida Veterinary Medical Association, the first Friday of each month at 8:00 p.m., place specified monthly. L. R. Poe, 753 W. Fairbanks Ave., Winter Park, Fla., secretary-treasurer.

Florida West Coast Veterinary Medical Association, the second Wednesday of each month at the Lighthouse Inn, St. Petersburg. Fred Jones, 3606 S. Dale Mabry, Tampa, Fla., secretary.

Jacksonville Veterinary Medical Association, the first Thursday of every month. Dodson's Restaurant, Stephen C. Hite, 5807 105th St., Jacksonville 10, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. John Webb, P.O. Box 183, Cantonment, Fla., secretary-treasurer.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. B. W. Bigger, 2833 S. 4th St., Fort Pierce, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. John S. Haromy, Route #1, Box 107-A, Lake Wales, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month. Time and place specified monthly. Joe B. O'Quinn, 1690 E. 4th, Hialeah, Fla., secretary.

Suwannee Valley Veterinary Association, the fourth Tuesday of each month, Hotel Thomas, Gainesville. G. L. Burch, P.O. Box 405, Ocala, Fla., secretary-treasurer.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. Robert E. Cope, 127 E. Mason, Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Medical Society, the third Thursday of each month at the Elk's Home, 726 Peachtree St., Atlanta. W. V. Smith, 1039 Marietta St., N.W., Atlanta, Ga., secretary.

Georgia-Carolina Veterinary Medical Association, the second Monday of each month at 8:00 p.m., at the Town Tavern, Augusta, Ga. J. A. Schmitz, Augusta, Ga., secretary-treasurer.

South Georgia Veterinary Medical Association, the second Sunday of each quarter at 3:30 p.m., at the Radium Springs Hotel, Albany, Ga. M. W. Hale, Route 2, Tifton, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Charles H. Armstrong, 1021 Davis St., Evanston, secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. E. I. Pilchard, Champaign, Ill., secretary-treasurer.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. P. T. Parker, 224 N. Mill St., secretary-treasurer.

QUICK, EFFECTIVE TREATMENT FOR TOPICAL INFECTIONS

KERASPRAY®

Keraspray provides 4 potent antibacterials, plus a local anesthetic. This broad antibacterial activity makes it especially useful as a topical dressing following closure of surgical incisions, dehorning and castration.

In the easy-to-use plastic insufflator, Keraspray offers effective therapy for infected wounds, ear and eye infections—specifically keratitis.

in large AND small animals

Each Gm. contains:

Neomycin sulfate	0.25%
Phenylmercuric nitrate	0.005%
Sulfanilamide	86.25%
Sulfisoxazole	10.0%
Tetracaine hydrochloride	0.5%

Supply: 5 Gm., 14 Gm. and 30 Gm. plastic insufflators.

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Veterinary Division

BRISTOL, TENNESSEE

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. Stanton Williamson, 217 W. Chippewa St., South Bend, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P.O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Medical Association, the second Monday of each month, except January, July, August, and October in Black's Tea Room, Waterloo, Iowa. A. J. Cotten, P.O. Box 183, Grundy Center, secretary.

Central Iowa Veterinary Medical Association, the third Monday of each month, except June, July, and August, at 6:30 p.m., Breeze House, Ankeny, Iowa. John Herrick, 202 S. Hazel Ave., Ames, secretary.

Coon Valley Veterinary Medical Association, the second Wednesday of each month, September through May, at 7:30 p.m., Cobblestone Inn, Storm Lake, Iowa. Robert McCutcheon, Holstein, secretary.

East Central Iowa Veterinary Medical Society, the Second Thursday of each month at 6:30 p.m., usually in Cedar Rapids, Iowa. T. F. Bartley, P.O. Box 454, Cedar Rapids, secretary.

Fayette County Veterinary Medical Association, the third Thursday of each month at 6:30 p.m. in West Union, Iowa. H. J. Morgan, West Union, secretary.

Lakes Veterinary Association, the first Tuesday of each month, September through May, at 6:30 p.m., at the Gardson Hotel, Estherville, Iowa. Barry Barnes, P.O. Box 162, Milford, secretary.

North Central Iowa Veterinary Medical Association, the third Thursday of April, at the Warden Hotel, Fort Dodge, Iowa. H. Engelbrecht, P. O. Box 797, Fort Dodge, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wisneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northwest Iowa Veterinary Medical Association, the second Tuesday of February, May, September, and December, at the Community Bldg., Sheldon. W. Ver Meer Hull, secretary.

Southeastern Iowa Veterinary Association, the first Tuesday of each month at Mt. Pleasant, Iowa. Warren Kilpatrick, Mediapolis, secretary.

Southwestern Iowa Veterinary Medical Association, the first Tuesday of April and October, Hotel Chieftain, Council Bluffs, Iowa. J. P. Stream, 202 S. Stone St., Creston, secretary.

Upper Iowa Veterinary Medical Association, the third Tuesday of each month at 7:00 p.m., at All Vets Center, Clear Lake, Iowa. W. A. Danker, Dows, Iowa, secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. R. H. Folsom, P.O. Box 323, Danville, Ky., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday of each month in Louisville or within a radius of 50 miles, except January, May, and July. G. R. Comfort, 2102 Reynolds Lane, Louisville, Ky., secretary-treasurer.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m., at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Leonard D. Krinsky, 6111 Hartford Rd., Baltimore, Md., secretary.

(*Continued on adv. p.* 36)

HELP US KEEP THE THINGS WORTH KEEPING

If you're a father, you don't have to look into your briefcase for the facts on how much peace is worth to you.

The answer is right in your heart.

But keeping the peace isn't just a matter of wanting it. *Peace costs money.* Money for strength to keep the peace. Money for science and education to help make peace lasting. And money saved by individuals to keep our economy healthy.

Every U. S. Savings Bond you buy is a direct investment in America's Peace Power. It not only earns money for you—it earns *peace.* And it helps us keep the things worth keeping.

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to treat bovine ketosis, canine dermatoses, inflammatory joint conditions with a duration of action that's "just right"

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(prednisolone trimethylacetate CIBA)

ULTRACORTENOL is a new and improved glucocorticoid with distinct advantages over prednisone and prednisolone: the duration of therapeutic action is "just right" and therefore optimally effective. Hence, a single intramuscular injection generally achieves the desired effects, and daily injections or supportive oral therapy are not needed to maintain effective corticoid levels.

ULTRACORTENOL has been extensively tested and enthusiastically accepted by a number of small- and large-animal practitioners[1-10] who found these regimens to be highly effective:

Dairy Cow	Ketosis (acetonemia)	Single 100- to 200-mg. injection*
	Shock ("downer" cow) syndrome	Single 200-mg. injection as supportive therapy.
Dog	Dermatoses	5 mg./10 pounds body weight, total single dose not to exceed 20 mg. For sustained therapy, repeat once or twice a week as indicated.
	Inflammatory joint conditions	5 mg./10 pounds body weight, total single dose not to exceed 20 mg. Supportive oral therapy not necessary.

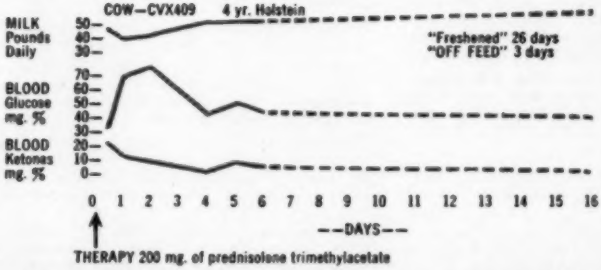
*This initial injection may be reduced to 50 to 100 mg. intramuscularly if simultaneous administration of intravenous glucose is given, thus permitting more economical glucocorticoid therapy. If necessary, either regimen may be augmented by an additional injection of 50 to 100 mg. Ultracortenol after 24 to 48 hours.

C I B A **Effective Veterinary Drugs, Products of Exacting Research**

New injectable glucocorticoid

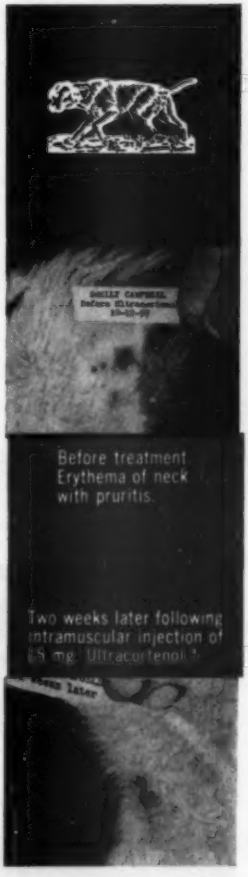
BOVINE KETOSIS Following a single intramuscular injection of Ultracortenol, investigators observe that:

- appetite is restored, depression is dispelled within 12 to 24 hours[1]
- blood glucose levels are raised within 12 hours[1]
- blood ketone levels return to normal within 24 to 96 hours[1]
- a steady increase in milk production begins after 48 hours.[2]



This chart shows the good response in ketotic cow following intramuscular injection of 200 mg. of Ultracortenol. (Adapted from Vigue[1])

CANINE DERMATOSES Reporting on 9 animals (of whom 6 received 15 or 20 mg. Ultracortenol in a **single** intramuscular dose), Pollock[3] says, ". . . Ultracorten Trimethylacetate [Ultracortenol] proved effective not only against the seemingly innocuous lesions, but also against the hemorrhagic dermatitis associated with exquisite pain." And, "The duration of the anti-inflammatory phase varies from seven to ten days depending upon the dosage. . . ."[3]



References: 1. Vigue, R. F.: J.A.V.M.A. 133:326 (Sept. 15) 1958. 2. Shaw, J. C.: Personal communication. 3. Pollock, S.: To be published. 4. Rabin, P. H.: Personal communication. 5. Hoffer, S. H.: Personal communication. 6. Weir, H. T., and Hazelrig, J. W.: Personal communication. 7. Beck, J. W.: Personal communication. 8. Bull, W. S.: Personal communication. 9. Fessenden, P. E.: Personal communication. 10. Lohmeyer, C.: Personal communication.

SUPPLIED: Multiple-dose Vials, 10 ml., each ml. containing 10 mg. or 25 mg. of prednisolone trimethylacetate in suspension for injection.

ULTRACORTENOL is available from ethical veterinary distributors throughout the United States.

3/2002 VK

CIBA SUMMIT, NEW JERSEY

MICHIGAN—Central Michigan Veterinary Medical Association, the first Wednesday of every month at 7 p.m. Jerry Fries, 2070 E. Main St., Owosso, Mich., secretary.

Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert W. Acton, 4110 Spring Rd., Jackson, Mich.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. Alvin R. Conquest, P.O. Box 514, Grand Blanc, Mich., secretary.

Southeastern Michigan Veterinary Medical Association, the fourth Wednesday of every month, September through May. Louis J. Rossoni, 24531 Princeton Ave., Dearborn 8, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month (except July and August), at the Coronado Hotel, Lindell Blvd. and Spring Ave., St. Louis, Mo., at 8 p.m. Edwin E. Epstein, 4877 Natural Bridge Ave., St. Louis 15, Mo., secretary.

Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Thursday of each month at the Hotel President, Kansas City, Mo. Robert E. Guilfoil, 18 N. 2nd St., Kansas City 18, Kan., secretary.

NEVADA—Western Nevada Veterinary Society, the first Tuesday of each month. Paul S. Silva, 1170 Airport Road, Reno, Nev., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, R.D. 1, Box 284A, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April, except December, at the Irvington House, 925 Springfield Ave., Irvington, N.J. Bernard M. Weiner, 787 Clinton Ave., Newark, N.J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Elks Club, Hackensack. James R. Tanzola, Upper Saddle River, N.J., secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. G. L. Smith, P.O. Box 938, Trenton, N.J., secretary.

South New Jersey Veterinary Medical Association, the fourth Tuesday of each month at the Collmont Diner, Collingswood, N.J. Marvin Rothman, 718 Dwight Ave., Collingswood, N.J., secretary.

NEW MEXICO—Bernalillo County Veterinary Practitioners Association, third Wednesday of each month, Fez Club, Albuquerque, N.M. Jack Ambrose, 3018 N. Rio Grande Blvd., Albuquerque, secretary-treasurer.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. C. G. Sims, 2450 Battleground Ave., Greensboro, N. Car., secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month, time and place specified monthly. Byron H. Brow, Box 453, Goldsboro, N. Car., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month. J. G. Martin, Boone, N. Car., secretary.

Twin Carolinas Veterinary Medical Association, the third Friday of each month at Orange Bowl Restaurant, Rockingham, N. Car., at 7:30 p.m. J. E. Currie, 690 N. Leak St., Southern Pines, N. Car., secretary.

Western North Carolina Veterinary Medical Association, the second Thursday of every month at 7:00 p.m. in the George Vanderbilt Hotel, Asheville, N. Car. Viiu Lind, 346 State St., Marion, N. Car., secretary.

OHIO—Cincinnati Veterinary Medical Association, the third Tuesday of every month at Shuller's Wigwam, 6210 Hamilton Ave., at North Bend Road. G. C. Lewis, 451 E. Galbraith Rd., Cincinnati, Ohio, secretary-treasurer.

Columbus Academy of Veterinary Medicine, every month, September through May. E. M. Simonson, 3120 Valley View Dr., Columbus, Ohio, secretary-treasurer.

Cuyahoga County Veterinary Medical Association, the first Wednesday in September, October, December, February, March, April and May, at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. F. A. Coy, 8208 Carnegie Ave., Cleveland, Ohio, secretary.

Dayton Veterinary Medical Association, the third Tuesday of every month. O. W. Fallang, 6941 Far Hills Ave., Dayton, secretary.

Killbuck Valley Veterinary Medical Association, the first Wednesday of alternate months beginning with February. D. J. Kern, Killbuck, Ohio, secretary-treasurer.

Mahoning County Veterinary Medical Association, the Fourth Tuesday of each month, at 9:00 p.m., Youngstown Maennerchor Club, Youngstown, Ohio. Sam Segall, 2935 Glenwood Ave., Youngstown, secretary.

Miami Valley Veterinary Medical Association, the first Wednesday of December, March, June, and September. J. M. Westfall, Greenville, Ohio, secretary-treasurer.

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last Wednesday of each month except during the summer. R. W. McClung, Tiffin, Ohio, secretary-treasurer.

Northwestern Ohio Veterinary Medical Association, the last Wednesday of March and July. C. S. Alvanos, 1683 W. Bancroft St., Toledo, Ohio, secretary-treasurer.

Stark County Veterinary Medical Association, the second Tuesday of every month, at McBrides Emerald Lounge, Canton, Ohio. M. L. Willen, 4423 Tuscarawas St., Canton, Ohio, secretary.

Summit County Veterinary Medical Association, the last Tuesday of every month (except June, July, and August), at the Mayflower Hotel, Akron, Ohio. M. L. Scott, 42 W. Market St., Akron, Ohio, secretary-treasurer.

Tri-County Veterinary Medical Association, the fourth Wednesday of January, May, and September. Mrs. R. Slusher, Mason, Ohio, secretary-treasurer.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Claude A. Tigert, 3032 N.W. 68th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Arlen D. Hill, 5302 E. 11th St., Tulsa, Okla., secretary.

Tulsa Association of Small Animal Veterinarians, first and third Mondays, City-County Health Dept. T. E. Messler, 3104 E. 51st St., Tulsa, Okla., secretary.

OREGON—Portland Veterinary Medical Association, the second Tuesday of each month, at 7:30 p.m. Ireland's Restaurant, Lloyds, 718 N.E. 12th Ave., Portland. Donald L. Moyer, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

Willamette Veterinary Medical Association, the third Tuesday of each month, except July and August, at the Marion Hotel, Salem. Robert J. Mallorie, P.O. Box 155, Silverton, Ore., secretary.

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine. Raymond C. Snyder, N.E. Corner 47th St. and Hazel Ave., Philadelphia 43, Pa., secretary.

Lehigh Valley Veterinary Medical Association, the first Thursday of each month. Stewart Rockwell, 10th and Chestnut Sts., Emmaus, Pa., secretary.

Pennsylvania Northern Tier Veterinary Medical Association, the third Wednesday of each odd numbered month. R. L. Michel, Troy, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

Georgia-Carolina Veterinary Medical Association—see GEORGIA.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. Jack E. Habluetzel, Route 1, Box 65-N, Ingleside, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary Ct., Richmond 20, Va., secretary.

Northern Virginia Veterinary Conference Association, the second Tuesday of each month. T. P. Koudelka, P.O. Box 694, Harrisonburg, Va., secretary.

Northern Virginia Veterinary Society, the second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

Southwestern Virginia Veterinary Medical Association, the first Thursday of each month. D. F. Watson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American

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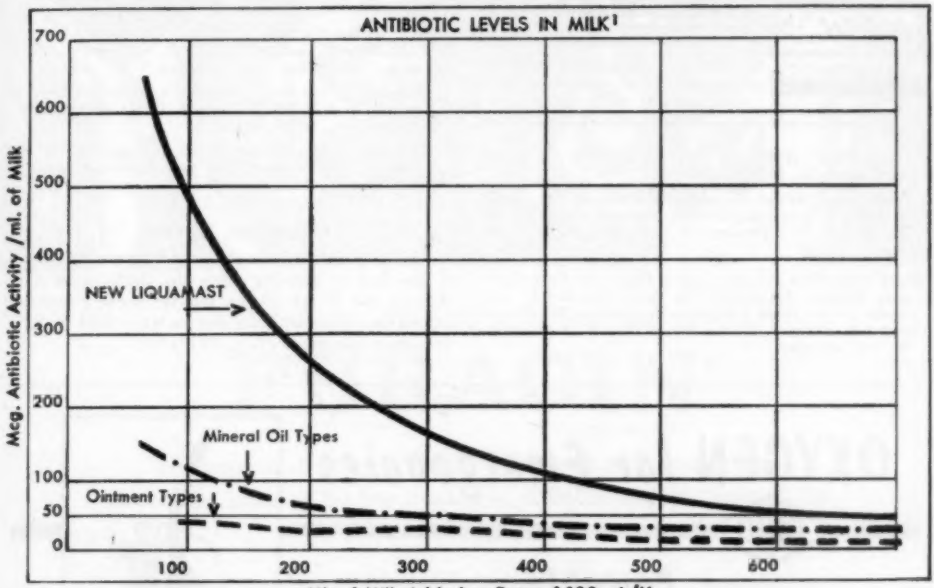

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Legion Hall, 2870 32nd W., Seattle. Roy C. Toole, 10415 Main St., Bellevue, secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. B. D. Benedictson, 3712 Plummer St., Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the third Thursday of each month in the Hotel Pritchard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

WISCONSIN—Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept., Dec.) C. R. Carlson, 1109 E. LaSalle Ave., Barron, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. Dr. E. P. Pope, 409 Farley Ave., Madison, Wis., secretary.

Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. Dr. Jordan Lewis, Menomonee Falls, Wis., secretary-treasurer.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday in April. William Madson, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. L. C. Allenstein, 209 S. Taft St., Whitewater, Wis., secretary.

Southeastern Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

Wisconsin Valley Veterinary Medical Association, the second Tuesday of every other month. John B. Fleming, 209 E. 4th St., Marshfield, Wis., secretary.

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*Belloff, G. B.: Calif. Vet. 9:16 (Nov.-Dec.) 1954.

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Exclusive Publication.—Articles submitted for publication are accepted with the understanding that they are not submitted to other journals, which is ethical publication procedure.

Manuscripts.—Manuscripts, including **footnotes, references,** and **tables,** must be typewritten, **double-spaced,** on 8½- by 11-in. bond paper, and the original and one carbon copy, submitted. One-inch margins should be allowed on the sides, with 2 in. at top and bottom. Articles should be concise. Short, simple sentences are clearer and more forceful than long, complex ones.

Illustrations.—Photographs should be furnished in glossy prints, and of a size that will fit into the JOURNAL of the American Veterinary Medical Association with a minimum of reduction. Photomicrographs which can not be reduced should be marked for cropping to 1-column or 2-column width. Identifying marks within the photomicrographs, such as arrows, letters, or numbers, should be clearly marked with black India ink or white opaque ink to insure good contrast for reproduction and must be large enough to stand reduction, if necessary.

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Tables.—Tables should be simple and typed **double space.** Complex tables are not conducive to perusal. It is wiser to summarize complex material than to tabulate it.

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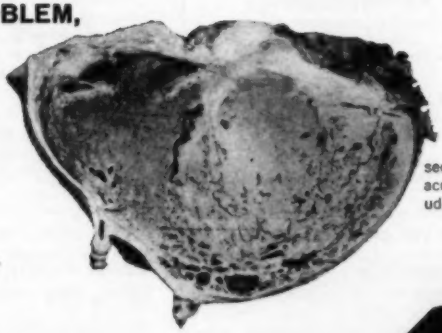

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Veterinarian wanted—Missouri-licensed for A.A.-H.A. hospital. State all particulars in first letter. Address "Box B 42," c/o JOURNAL of the AVMA.

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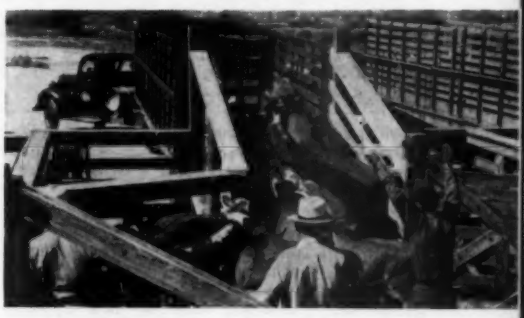

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Treated with SPARINE, ½ mgm. /lb. body weight	73	349.6	340.25	9.25	2.6
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	4	488.25	467.5	21.25	4.3
	27	464	448	15.7	3.4
	59	447.3	434	13.5	3.01
	59	446.65	433.3	13.3	3.04

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